INSTITUTE OF PUBLIC HEALTH

COLLEGE OF MEDICINE AND HEALTH SCIENCE

UNIVERSITY OF GONDAR

COST OF ILLNESS OF TUBERCULOSIS TO PATIENTS AND THEIR FAMILIES AND ASSOCIATED FACTORS IN GONDAR TOWN HEALTH INSTITUTIONS, NORTH GONDAR ZONE, NORTH WEST ETHIOPIA.

BY

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A THESIS SUBMITTED TO THE INSTITUTE OF PUBLIC HEALTH, COLLEGE OF MEDICINE AND HEALTH SCIENCES, UNIVERSITY OF GONDAR IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH IN HEALTH SERVICE MANAGEMENT

June, 2014

Gondar, Ethiopia

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Examiner

Acknowledgement

First of all my gratitude goes to my advisors Dr. Mezgebu Yitayal and Miss Tirsit Mehari, for their unreserved support, concrete and expert advice, suggestions and assistance in all aspects of this research work.

It is also my great pleasure with the help of, North Gondar zonal and Woreda Health offices, Gondar University Hospital for their support through providing all the necessary information for this paper.

I also would like to extend my sincere appreciation to Mr Daniel Tekeba, Mr Fekadie Haile and Mr Birhanu Mamo for their inspiration which contributed in the formulation of my proposal and my thesis.

I extend my thanks to my families especially my brother Yonatan Nigatu, all MPH students, all academic and non academic members of staff of Institute of Public Health and department of Health service management for their collaboration and assistance during my studies.

I am very grateful to forward my appreciation to Gondar town health office and health institution staff for their collaboration in creating conducive environment during my study. Last but not least, I would also like to thank all study subjects, data collectors and supervisors for their active participation in the data collection process.

Acronyms

ANRS	Amhara National Regional State
CI	Confidence Interval
COI	Cost of Illness
DOTs	Directly Observed Treatment Short course Strategy
GDP	Gross Domestic Product
GUH	Gondar University Hospital
HBCs	High Burden Countries
HIV	Human Immune Deficiency Virus
HSDP	Health Sector Development Plan
MDR-TB	Multi Drug Resistance Tuberculosis
MMI	Mean Monthly Income
SPSS	Statistical Package for Social Science
TB	Tuberculosis
UOG	University of Gondar
US$	United States Dollar
WHO	World Health Organization

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Abstract

Introduction: Tuberculosis is a major global health problem worldwide. It causes ill-health among millions of people each year and ranks as the second leading cause of death from an infectious disease worldwide, after the human immune-deficiency virus. The basic underlying condition of any efficient allocation of resource is, knowing the financial cost of the disease. In Ethiopia there is a scarcity of well documented information on the costs of tuberculosis to patients and their families.

Objective: To assess the cost of illness of tuberculosis to patients and their families and associated factors in Gondar town Health institutions, North West Ethiopia.

Methods: A cross sectional study was undertaken from March to June 2014 in Gondar town health institutions. Data were collected from 245 tuberculosis patients by using a structured questionnaire. Numerical summary measures were used to describe the data. Binary logistic regression was applied to see the association of cost of illness of tuberculosis with socio-economic and demographic characteristics, and tuberculosis related factors. Odds ratio with 95% confidence interval was estimated using multivariate logistic regression model to identify predictors of cost of illness of tuberculosis.

Results: The mean direct and indirect cost of tuberculosis to outpatients and their families were 1064.90 Birr and 5142.60 Birr respectively and the mean direct and indirect cost of tuberculosis were 1290.10 Birr and 3154.50 Birr respectively at the time of the study. Educational status with AOR= 2.236, 95% CI (1.075, 5.035), visiting of other health providers with AOR= 0.019, 95% CI (0.002, 0.216), marital status with AOR= 0.287, 95% CI (0.120, 0.690) and gender with AOR= 0.180, 95% CI (0.045, 0.723) were found to be predictors of direct and indirect cost of tuberculosis.

Conclusion: Costs of tuberculosis to patients and their families, especially before the identification of the diseases was found to be high and the costs were arising from work days lost, educational status of other than illiterate, marital status, care givers income lose due to the illness and other health providers visiting therefore consequences of Tuberculosis to patients and their families are serious.

Recommendations: There should be increased focus on early diagnosis and treatment of tuberculosis which is imperative in limiting the spread of this highly infectious disease in order to minimize the costs incurred by patients and their families in seeking cure from their illness.

1. Introduction

Background of the study

Tuberculosis (TB) is a chronic infectious disease that is caused by Mycobacterium *tuberculosis***,** a bacterium that is spread from person to person through airborne particles. It is spread through the air when people who have an active TB infection cough, sneeze, or transmit respiratory fluids through the air. TB primarily affects the lungs, but it can also affect organs in the central nervous system, lymphatic system, and circulatory system among others **(1, 2).**

Tuberculosis (TB) is a major global health problem worldwide. It causes ill-health among millions of people each year and ranks as the second leading cause of death from an infectious disease worldwide, after the human immune-deficiency virus (HIV) **(3).**

The latest estimates included that there were 8.6 million new TB cases in 2012 and 1.3 million TB deaths (940,000 among HIV-negative people and 320,000 among people who are HIV positive). This is equivalent to 14 deaths per 100,000 populations. Among these deaths there were an estimated 170,000 from MDR-TB, a relatively high total compared with 450,000 incident cases of MDR-TB. In addition, there were an estimated 0.43 million deaths among incident TB cases that were HIV positive. China and India accounted for 40% of notified tuberculosis case in 2010, Africa accounted for 24% **(4, 5, 6).**

Ethiopia is one of the 22 high burden countries (HBCs) (4). The national population based TB prevalence survey conducted in 2010/11 revealed that the prevalence of smear positive TB among adults and all age group was found to be 108 and 63 per 100,000 populations, respectively. The prevalence of bacteriologically confirmed TB was found to be 156/100,000 populations and by extrapolations, the prevalence of all forms of TB in Ethiopia is estimated to be 240/100,000 populations. According to the WHO global TB report 2012 which considered the findings from the national TB

prevalence survey, there were an estimated 220,000 (258 per 100,000 populations) incident cases of TB in Ethiopia in 2011 (6).

Incidence of all forms of TB and bacteriologically confirmed TB in Amhara region is 258 and 100 per 100,000 populations respectively (7). The national cure and treatment success rates are 67% and 84%, which is on track towards HSDP III target, while the case detection rate remains at 34%, far less than what was planned for HSDP III. Regional disaggregation showed highest Case Detection Rate in urban administrations (Harari 95%, Dire Dawa 81% and Addis Ababa 63%); whereas, Somali, Amhara and Tigray regions performed low at 19%, 23%, and 26% respectively **(8).**

1.1. Statement of the problem

Tuberculosis continues to be one of the major public health problems in the world. Ethiopia is one of 22 countries with highest burden of tuberculosis worldwide. Tuberculosis affects more people aged between 15 and 49 years, most of them living in overcrowded houses (5, 6).

Delay in case detection and treatment may worsen the prognosis of the disease and spread of TB infection. Early detection and prompt treatment of infectious TB cases is important in order to reduce TB infection (9, 10).

TB differs from other diseases with high mortality rates because it has a highly effective treatment available. The greatest burden of TB incidence and mortality is found in the 15-49 age groups. Therefore, the economic costs of TB, in terms of lost production, are considerable. Medical treatment usually enables people to return to an active and economically productive life, often with no disability or residual morbidity. By making people non-infectious through medical treatment, transmission can be prevented and the global burden of the disease considerably reduced **(11).**

Ethiopia is among countries with a high burden of tuberculosis (12). A study conducted in Ethiopia found that, on average, 48% of annual household income was lost due to TB treatment. Males have higher indirect costs (measured as loss of income) than females, while females incur higher direct costs than males. The cost for lower-income groups (<US$57.5/month) is less than for higher incomes. Patient costs per visit are high during the intensive phase of treatment, but declined drastically over time. In particular, indirect costs are high during the intensive phase. During the continuation phase, when symptoms are less severe, indirect costs decrease (13). Individuals who have contracted tuberculosis will oftentimes lose months of wages due to the inability to work and the costs associated with diagnosis, care, and treatment **(15).**

In Ethiopia there is a scarcity of well documented information on the costs of tuberculosis to patients and their families even to the health care facilities. The findings of the study will provide valuable cost of illness information on tuberculosis to the health care planners, managers and the society.

1.2. Literature Review

Tuberculosis affects mostly economically active population in underdeveloped and developing countries; therefore TB can have far reaching economic and social consequences among infected people and their household members **(14).**

TB most frequently affects adults of working age and therefore puts families at risk for poverty and creates tremendous implications for gross domestic product (GDP). Individuals who have contracted tuberculosis will oftentimes lose months of wages due to the inability to work and the costs associated with diagnosis, care, and treatment. Healthy family members are forced to work harder and longer in an attempt to make up for the financial burden of TB. If an individual succumbs to the illness, surviving kin face an increased risk of poverty and psychological grief or depression **(15).**

There are several important risk factors for contracting tuberculosis including HIV and other immune-compromising diseases, exposure to an infected individual, undernourishment, overcrowding, and poor access to adequate health care facilities. Many of these factors are linked to poverty and poor health systems. Because the impoverished tend to live in crowded conditions, they are more at risk for contracting the infection. Additionally, poverty often goes hand in hand with malnourishment, a problem that leads to an increased susceptibility to the disease. Immune-compromised individuals (including those with HIV), have an increased risk of contracting tuberculosis (15).

The World Health Organization (WHO) estimates that 85 per cent of TB cases occur in Asia and Africa (55 per cent and 30 per cent, respectively), with India and China alone accounting for 35 per cent of all cases. Risk factors for these TB-related outcomes include structures, behaviors and other diseases commonly associated with poverty overcrowded living or working conditions, poor nutrition, smoking, alcoholism, diabetes, exposure to indoor air pollution and HIV **(16, 17).**

Factors associated with costs of illness of tuberculosis

1.2.1. Socio – economic and Demographic factors

Poverty and Cost of Tuberculosis

TB is often known as “a disease of the poor” because the burden of TB follows a strong socio economic gradient both between and within countries, and also within the poorest communities of countries with high TB incidence. Some studies have shown a strong association between poverty and TB and have demonstrated that poor and vulnerable groups are at an increased risk of TB infection, have a higher prevalence of disease, have worse outcomes (including mortality), and display worse TB care-seeking behaviors (17).

It is also well-known that TB can contribute to poverty by reducing patients’ physical strength and ability to work. However, another pathway through which TB can affect households’ economic situation, the costs patients incur when utilizing TB care, has been less studied (17).

These costs include both direct out-of-pocket costs linked to seeking diagnosis and treatment including medical expenses, fees, transport, accommodation and food expenditures incurred when seeking treatment and care and the Indirect (opportunity) costs which differ from financial cost and include the cost of foregone income due to the inability to work because of the illness and loss of time due to visits to health facilities, time spent on the road to and at health facilities, lost productivity and loss of job associated with utilizing health- care (18).

1.2.2. Expenditure, Income, Delay and Cost of TB

Longer patient delays between first experience of symptoms and first health service encounter were also associated with higher costs. A possible explanation may be that those who delay in presenting to the health centre are more ill than those who present for earlier consultation, and therefore incur higher related treatment costs

(19). Direct medical expenditures ranged from between 10% of mean monthly income (MMI) for men and 132% of MMI for women in Zambia to 31% for all patients in Ethiopia, while non-medical expenditures ranged from 42% in Ethiopia to 55% of MMI in Zambia. In Ethiopia, 48% and 35% of annual household income was lost due to TB treatment and pre treatment costs, respectively. In addition, direct costs of TB was I$11 in Zambia and I$ 527 in Ethiopia, while indirect costs of TB was I$21 in Zambia and I$ 145 in Ethiopia (19, 20).

Studies have also demonstrated a robust association between external constraints and patient delay. Distance from DOTS clinics (e.g. rural areas in The Gambia, Tanzania, Zambia) accounts for longer delay. Transportation costs (which are associated with distance between residence and DOTS clinics) also account for variations in timing of diagnosis in Zambia. Studies have found that other costs and financial difficulties more broadly also account for delay in China. Patients are more likely to delay diagnosis when they need to borrow money to get to healthcare services, lose daily income to attend DOTS clinics, and lack health insurance (21).

A study conducted in Ethiopia showed that, the median days spent for consultation among patients who had also sought care from alternative care providers was 9 (mean = 14 days). Patients' mean days elapsed at alternative care providers and public health facilities were 5 and 3 days respectively (12).

Forty three percent of patients were accompanied by at least one person to public health facilities. The unit median indirect costs for the time spent during consultations and travel at different care providers were $8 (mean = $31) and $0.6 (mean = $2) respectively. The median direct costs spent for diagnosing each patient were: $1.4 (mean = $4) for transport, $5 for lodgings and $9 (median = $18) for medical care. The median total cost spent to diagnose each patient was estimated at $27 (mean = $59). Indirect costs, direct non-medical and direct medical constituted 39%, 16% and 45% of the total cost respectively. The indirect and direct costs comprised 61% and 39% of the total cost spent to diagnose TB patient (12).

There have been many studies on cost-effectiveness of different TB control strategies, mainly investigating the costs to the health system. One of the first studies to comprehensively measure household costs found that the costs of an episode of TB in Thailand amounted to 20% of annual household income in the poorest third of Patients and thus were devastating. Other studies also found that household costs of an episode of TB were considerable ranging from $186 to $1457 in Tanzania depending on treatment duration and around $920 in China (22).

A study in Tajikistan founded that, the mean total household costs of an episode of TB were $1053. Patients reported household costs of $292 before the start of DOTS treatment, costs of $338 during the intensive phase, and $422 during the continuation phase. Thus about three fourth of costs were encountered after the patients were enrolled in the DOTS program. Direct costs amounted to $152, $147, and $97 for the period up to start of DOTS treatment, intensive phase, and continuation phase, respectively. Thus direct costs amounted to $396 in total over all periods and constituted 38% of total costs, the rest being lost income (22).

In 2009, the Dominican Republic Ministry of Health and its partners conducted a study to determine the costs that TB patients incur. Direct (“out-of-pocket”) and indirect (opportunity) costs of new, retreatment, and MDR-TB patients before and during diagnosis and during treatment were investigated. This was linked to information on patients’ socioeconomic status, health-seeking behavior, and HIV status, as well as the impact of TB on the welfare of the household and found that the total costs of TB was amounted to a median of US$ 908 for new patients, US$ 432 for retreatment patients, and US$ 3 557 for MDR-TB patients. The proportion of patients without a regular income increased from 1% to 54% because of falling ill with TB **(23).**

Conceptual framework

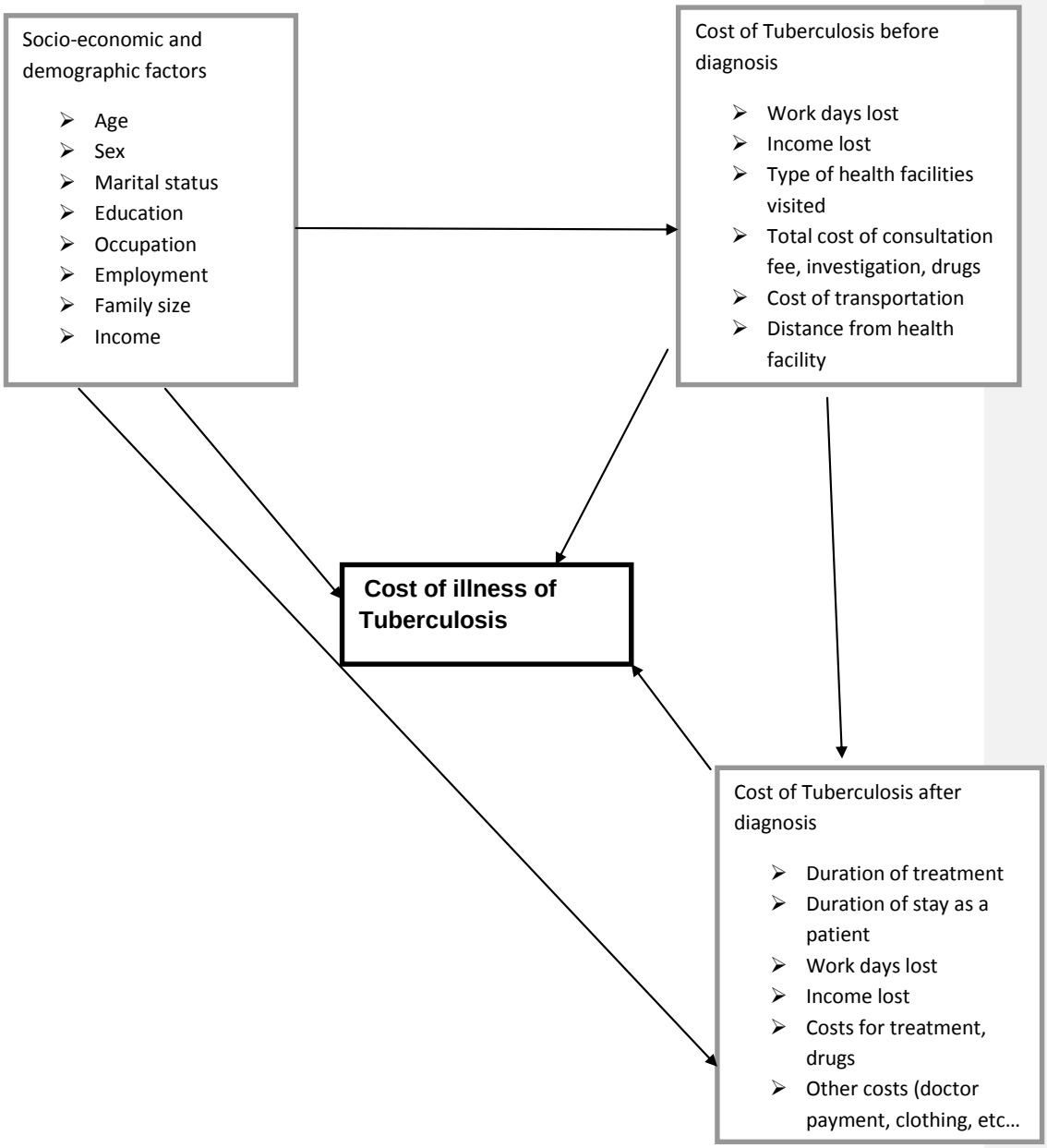

Figure 1: Conceptual framework for factors affecting cost of illness of Tuberculosis

1.3. Justification of the Study

The basic underlying condition of any efficient allocation of resource is, knowing the financial cost of the disease. Without analyzing the costs it is impossible to contemplate or improve the efficiency of disease control projects. In particular, the ongoing reform and decentralization processes in the health care systems of developing countries require precise cost information (24). On the most part, health care organizations use cost accounting to the estimate unit cost of their services that could help plan a realistic budget and price for the service **(25).**

In Ethiopia there is a scarcity of well documented information on the costs of tuberculosis to patients and their families even to the health care facilities. The findings of the study will provide valuable cost of illness information on tuberculosis to the health care planners, managers and the society, so that they have a clear understanding of the diseases burden that is used in giving priority in case of resource allocation. It will also serve as a baseline data for further research in this aspect.

2. OBJECTIVES

General Objective

- To determine the cost of illness of tuberculosis to patients and their families and associated factors in Gondar town health institutions, North Gondar Administrative Zone, North West Ethiopia.

Specific Objectives

- To determine the direct cost of tuberculosis to patients and their families
- To determine the indirect cost of tuberculosis to patients and their families
- To identify factors associated with cost of illness of tuberculosis to patients and their families

3. METHODS

3.1. Study Design

A cross-sectional study was conducted on 245 study participants from March to June 2014 at Gondar Town health institutions, North Gondar Administrative Zone.

3.2. Study Area

The study was conducted in Gondar town, the capital of North Gondar Administrative Zone in Amhara National Regional State (ANRS), is about 738 Km away from Addis Ababa and is 180 Km away from Bahir Dar, the capital city of ANRS.

Administratively, the town is divided into 24 kebeles (lowest administrative units). According to the 2005 Ethiopian fiscal year (2013) report of the zone, the projected population of Gondar town was estimated to be 258,178 Out of the total, the male population accounts for 47.3 %) and the female for 52.7%individuals. The town has public services like telecommunication, postal services, a 24 hours hydroelectric power and water supply system. The town has one hospital 8 health centers, 14 health posts and 44 private clinics. According to Gondar town health office source, in 2005 E.C (2013.), a total of 1022 TB cases were seen in 8 health centers including 12 private clinics and Gondar University Hospital and more than 950 TB cases are receiving their treatment as outpatients. The payment scheme of the hospital and the health centre is free of charge for DOTS but the patient has to pay for laboratory tests, X-ray examination and consultation fees (26).

3.3. Population

Source populations: All TB cases who were found in Gondar town.

Study populations: All TB patients who were taking treatment as outpatient and all TB patients who were taking treatment as inpatient at health institutions on Gondar town during the study period (March- May 2014).

Inclusion Criteria

TB patients who are 15 years age and above, taking treatment as new, retreated (patients who received second line regimen), or MDR-TB patients received treatment for at least one month and willing to participate.

Exclusion Criteria

Patients who were critically ill are excluded from the study.

3.4. Sample Size Determination

The number of TB cases included in the study (participants) was determined using single population proportion formula. The assumption in the calculation of the sample size is 95% confidence interval (CI), marginal error (d) of 5 %, and 10% non-response rate

$$n = \frac{Z\alpha^2 p(1-p)}{d^2}$$

Where, n = sample size

p = 50% - taking the maximum proportion of TB cases who were found to incur heavy expenditure seeking a diagnosis

d = assumed marginal error (5%)

$$n = \frac{(1.96)^2 (0.50)(0.50)}{(0.05)^2} = 384$$

Adding 10% non-response rate, the expected sample size was 422 TB cases (outpatient and inpatient).

But because the study populations were less than 10,000, the sample size was calculated by using population correction formula

$$nf = n/(1+(n/N)$$

Where,

nf = desired sample size (with population <10,000)

n = desired sample size (with population >10,000)

N = the estimate of the population size

nf = 422/(1+(422/1022)

nf = 299

Therefore, the final sample size for this study was 299

3.5. Sampling Procedure

Study participants were selected from health institutions found at Gondar town. The outpatient cases were selected on daily basis as they come for their treatment at health institutions and the inpatients were also be selected on daily basis as admitted to the same health institutions during the study period. Information regarding the costs of illness of tuberculosis was collected by asking tuberculosis patients, and the patients' caretakers or families if the patients are unable to respond.

Sampling Technique???

3.6. Variables of the study

Dependent variable

Costs of Tuberculosis to patients and their families

Independent variables

Socio- economic and demographic factors such as: - expenditures due to illness, income, age, sex, education, marital status, occupation, family size, employment; Work days lost, distance from health facility, other health provider visiting, income

lost, costs for consultation, diagnosis, treatment, transport e.t.c , duration of treatment.

3.7. Operational Definitions

Direct Costs

Direct costs of illness are ***expenditures in Ethiopian Birr expended by patients and their families for medical goods and services (e.g., medications, doctor visits, transportation, food, hospitalization, etc)*.** Direct costs are further classified as direct medical and direct nonmedical costs.

Low and High Costs

Low costs are costs incurred by patients and their families which are below the median range and high costs are costs incurred by patients and their families which are above the median range.

Indirect Costs

Indirect Costs are ***costs (productivity losses) in Ethiopian birr expended or lost*** by the patients and their families, and include income losses due to lost workdays.

Inpatient TB case

A TB case, that has been diagnosed to have TB and is being admitted in the hospital for close follow-up and treatment.

Intangible costs

Intangible costs are costs of pain, grief and suffering and loss of leisure time.

Outpatient TB case

A TB case, who has been put on anti-TB treatment and is receiving his/her treatment on ambulatory basis i.e. who is not admitted as an inpatient TB case

Patient delay

The time (the number of days) between the onset of the first disease symptoms until first visit to qualified medical personnel or health care facility

Provider delay

The time (the number of days) between the times the first visit was made to a health facility to the time the patient starts treatment.

Total delay

Is defined as the time (the number of days) from symptoms of TB to the time a patient is diagnosed and put on treatment.

Tuberculosis case

A patient who has been diagnosed as suffering from tuberculosis by a clinician and has been prescribed or referred to treatment

3.8. Data collection procedures (instrument, personnel, data quality control)

The data were collected using a structured questionnaire having three parts, the first containing socio-economic and demographic characteristics, the second contains costs of Tuberculosis before diagnosis and the third contains Costs of Tuberculosis after Diagnosis (after identification of the disease) and the questionnaire was administered by data collectors who were trained for two days for this purpose. The data collectors were clinical nurses. They were introduce themselves and explained the purpose of the study using specific statements in a standard procedure.

The data quality was insured by using a structured questionnaire that has been applied in other areas, pre-testing the questionnaire on patients from the TB clinic which were not included in the actual study and performing a daily check up of questionnaires filled by data collectors, in addition, regular meetings were held between the data collectors and the investigator in which some issues arising from interviews were discussed and decisions were reached.

Pre-testing

The structured questionnaire was pre-tested two weeks before the study period in the same health institutions on TB patients who were not participated in the actual study and those patients who participate in the pre-testing process were excluded by

asking them whether they participate or not before and confirming their TB patient identity card. The pretest was done on (15)5% of the study participants and the questionnaire were assessed for its completeness, clarity and length.

3.9. Data Processing and Analysis

Data were checked, coded and entered in to Epi – info 3.5.1 and were exported to SPSS (Statistical Package for Social science) version 20 for analysis. Data entry was made by data clerk. In the analysis, the socio-economic and demographic data were related with the pattern of tuberculosis in outpatient and inpatient cases and the direct and indirect costs incurred by patients and their families were estimated using the expenditures they have paid for diagnosis, treatment, drugs and other supplies and for transportation to health care facilities in outpatient case and was include expenditures during hospitalization in the case of inpatient cases.

Percentage and numerical summary measures such as median, mean, range and standard deviation were used to describe the socio- economic and demographic characteristics of the study participants, and TB conditions.

The costs which were incurred by patients and their families were dichotomized in to low costs (costs which are below the median range) and high costs (costs which are above the median range), then Binary logistic regression was used to see the association of cost of illness of tuberculosis with socio- economic and demographic characteristics, and tuberculosis related factors. Explanatory variables which have significant association with cost of illness of TB (p-value ***less than 0.2***) in the bivariate binary logistic regression were entered to multivariate logistic regression model to identify predictors of cost of illness of TB.

Measurement of costs

Traditionally, the cost of illness studies examined direct costs, indirect costs and intangible costs ***(27).*** ***Direct costs incurred*** by patients and their families were estimated using the expenditures they have paid for diagnosis, treatment, drugs and other supplies and for transportation to health care facilities in outpatient case and will include expenditures during hospitalization in the case of inpatient cases.

Indirect costs or productivity losses are lost output due to reduced productivity caused by absenteeism, temporary or permanent disability and premature mortality due to the disease (TB). Human capital approach is a method of valuing livelihoods and values life as the value of forgone lost production. The loss of productivity associated with temporary or permanent disability was valued using gross earnings lost or some proportion of earnings if an individual is unable to work at full capacity. In practice the opportunity costs of lost productivity may be less than the gross earnings. Thus, indirect costs were reported as potential costs using human capital approach and were estimated on the basis of the loss of workdays that leads to inability to work for by patients and their families. These workdays were changed into monetary terms using the wage the patients and their families have been earning ***(28).***

Intangible costs of pain, grief, suffering and loss of leisure are very difficult to measure. Pain, suffering and other reductions in quality of life are intangible and, by definition, difficult to quantify. Strictly, the intangible effects of illness are not costs. They are negative benefits. Thus, as benefits are not included within the Cost of Illness (COI) framework, this study omitted the costs related to it ***(28).***

4. Ethical consideration

Ethical clearance was obtained from Institute of Public Health Research Ethical Review Committee of University of Gondar, and permission letter was obtained from Gondar town health office and concerned bodies. Before enrollment, each eligible study participant (15 years of age and above) from TB Clinic of health Institutions on Gondar town was received detailed information about the study in the local language (Amharic) based on the information sheet, the importance of their participation, withdraw at any time and each volunteer was requested for written informed consent to give the requested information as an interview. Only participants who are agreed were interviewed after their full consent. Privacy and confidentiality of information given by each respondent was assured, including by not mentioning their name in any communication, (using their TB patient number). Clarifications were done as required.

5. Dissemination of results

The results of the study will be presented to University of Gondar, College of medicine and health sciences, Institute of Public Health, Department of Health Service Management as part of master of public health thesis and it will also be shared to Amhara regional health bureau, North Gondar zone health department, Gondar town health office, GUH and Concerned bodies. Efforts will be made to present the results on scientific conferences, Workshops facilitated by organizations like Ethiopian Public Health Association. A manuscript will be prepared and submitted for publication in an appropriate journal.

6. RESULT

6.1. Socio – demographic results of the study population

The study population included a total of 245 tuberculosis patients with a response rate of 81.9% from Gondar town health institutions including Gondar university hospital. Out of 245 cases, 213 were outpatient and the rest 32 were inpatient cases. Most of the study population was male which accounted for 55.5% (136 out of 245) of the general respondents and 53.5% (114 out of 213) of the outpatient cases.

Table 1: Socio-demographic Characteristics of the Study Population, Gondar town, Ethiopia, May, 2014

Socio-demographic Characteristics	Outpatient		Inpatient		Total	
Sex	**No**	**%**	**No**	**%**	**No**	**%**
Male	114	53.5	22	68.8	136	55.5
Female	99	46.5	10	31.3	109	44.5
Total	213	100	32	100	245	100
Age	**No**	**%**	**No**	**%**	**No**	**%**
15 – 24 years	63	29.6	10	31.3	73	29.7
25 - 34 years	76	35.7	11	34.4	87	35.5
35 - 44 years	38	17.8	4	12.5	42	17.1
45 - 54	20	9.4	5	15.6	25	10.2
55 and above	16	7.5	2	6.3	18	7.3
Total	213	100	32	100	245	100

Marital Status	**No**	**%**	**No**	**%**	**No**	**%**
Single	109	51.2	17	53.1	126	51.4
Married	60	28.2	8	25	68	27.7
Separated	9	4.2	4	12.5	13	5.3
Widowed	10	4.7	3	9.4	13	5.3
Divorced	25	11.7	-	-	-	-
Total	213	100	32	100	245	100
Educational Status	**No**	**%**	**No**	**%**	**No**	**%**
Illiterate	55	25.8	11	34.4	66	26.9
Read and Write	13	6.1	3	9.4	16	6.5
Grade 1^{st}-6^{th}	42	19.7	4	12.5	46	18.7
Grade 7^{th}-8^{th}	23	10.8	4	12.5	27	11
Grade 9^{th}-12^{th}	52	24.4	7	21.9	59	24.1
College/University	28	13.1	3	9.4	31	12.6
Total	213	100	32	100	245	100
Family Size	**No**	**%**	**No**	**%**	**No**	**%**
1-3	99	46.5	18	56.3	117	47.7
4-6	88	41.3	12	37.5	100	40.8
7 and above	26	12.2	2	6.3	28	11.4
Total	213	100	32	100	245	100

The age distribution of the study population showed that 29.6% of outpatient and 31.3% of the inpatient cases (29.7% of total study population) was between the ages of 15 and 24. The majority of the outpatient (35.7%) and the inpatient (34.4%) cases

were between the age of 24 and 34. Thirty five point five percent of the study population lies on this age group. The age of 7.3% (18) of the study population (7.5% (16) of outpatient and 6.3% (2) of inpatient) is 55 and above years which is the lowest age group. (Table 1). The mean age for outpatient cases were 32.6 $\pm$ 13.8 years and for inpatient cases was 32 $\pm$ 13.2 years.

It was found out that 51.4% of the entire study population was single while 27.7% of the study population was married. The result for marital status of the study population indicated that 51.2% of the outpatient and 53.1% of the inpatient cases were single (never married). Twenty eight point two percent of the outpatient and 25% of the inpatient cases were married. The rest 20.6% of the outpatient and 21.9% of the inpatient cases were either separated or widowed or divorced. (Table 1).

The study showed that larger numbers of the outpatient cases (25.8%) and of the inpatient cases (34.4%) were illiterate. On the contrary, 24.4% of the outpatient and 21.9% of the inpatient cases were between grade 9^{th} and grade 12^{th}. In addition 13.1% and 9.4% of the outpatient and inpatient cases were attained college/university education respectively. (Table 1).

Family size of the study population showed that higher numbers of outpatients (46.5%) and inpatients (56.3%) had a family size of 1-3 persons per family. Forty one point three percent of the outpatient and 37.5% of the inpatient cases had a family size of 4-6, and 12.2% of the outpatient and 6.3% of the inpatient cases had a family size of 7 and above per family (table 1).

6.2. Socio – economic results of the study population

Regarding the occupation of the study population, students, government employees and farmers accounted for 14.6%, 8.9% and 9.4% of the outpatient cases respectively. Unemployed persons and daily laborers also accounted for 8% and 17.4% of the outpatient cases respectively. Among the inpatient group, students and farmers also accounted for 25% and 15.6% of the inpatient cases respectively (Table 2).

In this study, 26.8% of the outpatient and 18.5% of the inpatient cases had a monthly family income of 100 - 800 Birr. About 50 outpatient cases (23.5%) and 6 inpatient cases (22.2%) had a monthly family income of 801 - 1214 birr. Twenty five point four percent of the outpatient and 29.6% of the inpatient had a monthly family income of 1215 - 2000. Twenty four point four percent of the outpatient cases and 29.6% of the inpatient cases had a monthly family income of 2,001 and above Birr. (Table 2). The mean monthly family income was 1637 ± 850.3 Birr (median: 1350 Birr, Range: 500-3500 Birr) for inpatient cases while it is 1726 ± 2153 Birr (median 1214 range 100 – 28,000) for outpatient cases.

Table 2: Socio-economic Characteristics of the Study Population, Gondar town, May, 2014

Socio-economic Characteristics	Outpatient		Inpatient		Total	
Occupation	**No**	**%**	**No**	**%**	**No**	**%**
Unemployed	17	8	-	-	17	6.9
Retired	2	0.9	-	-	2	0.8
Student	31	14.6	8	25.0	56	22.9
Sick	5	2.3	5	15.6	10	4.1
Self employ buss with employees	2	0.9	-	-	2	0.8
Housewife	37	17.4	3	9.4	40	16.3
Merchant	22	10.3	1	3.1	23	9.4
Daily Laborer	37	17.4	4	12.5	41	16.7
Gov. employee	19	8.9	3	9.4	22	8.9
Private employee	21	9.9	1	3.1	22	8.9
Farmer	20	9.4	5	15.6	25	10.2

Self employ buss with no employees	-	-	2	6.3	2	0.8
Total	213	100	32	100	245	100
Monthly Family Income (Birr)	**No**	**%**	**No**	**%**	**No**	**%**
100-800	57	26.8	5	18.3	62	25.8
801-1214	50	23.5	6	22.2	56	23.4
1215-2000	54	25.4	8	29.6	62	25.8
2001 and above	52	24.4	8	29.6	60	25
Total	213	100	27	100	240	100
Monthly Individual Income (Birr)	**No**	**%**	**No**	**%**	**No**	**%**
50-335	53	24.9	3	15.8	56	24.1
336-600	56	26.3	2	10.5	58	25.1
601-1200	55	25.8	4	21.1	59	25.4
1201 and above	49	23	10	52.6	59	25.4
Total	213	100	19	100	232	100

Monthly Individual Expenditure	**No**	**%**	**No**	**%**	**No**	**%**
50-255	53	24.9	4	20	57	24.5
256-600	65	30.5	2	10	67	28.7
601-1000	58	27.2	9	45	67	28.7
1001 and above	37	17.4	5	25	42	18.1

Total	213	100	20	100	233	100

The study also showed that 213 (100%) outpatient cases and 19 (59.4%) inpatient cases had their own monthly income. The mean monthly individual income for outpatient cases was 953.7 ± 1018.6 (median: 600, range: 50-8000) Birr while the mean monthly individual income for inpatient cases was 817.7 ± 842.1Birr. (Median 700, range: 50-2500). Twenty four point four percent of the outpatient cases and 15.8% of the inpatient cases had monthly individual income of 50-335 birr. Ten point five percent of the inpatient cases and 26.3% of the outpatient cases had a monthly income of 336-600 Birr. 25.8% outpatient cases and 21.1% inpatient cases had a monthly individual income of 601-1200 birr. Forty nine outpatient cases (23%) and 10 inpatient cases (52.6%) cases had 1201 and above Birr monthly individual income (Table 2).

The mean monthly family expenditure of the outpatient cases based on the response of the interview was 824.5 ± 1,063.5 Birr (median: 824 Birr, range: 50-9,000 Birr) while it was 725.5 ± 429.5 (median: 735 Birr, range: 50-1,500 Birr) Birr for inpatient cases. (Table 2).

6.3. Costs Incurred by Outpatient Cases before Identification of the Disease

Out of 213 cases, 194 (91.1%) reported that they had had the signs and symptoms of the disease (TB) before the identification of TB. Fifty five point nine percent (119 of 213) remained from work and 65 of 213 (30.5%) had financial/economic loss due to the illness. Accordingly, the mean patient delay from the onset of the disease to the first time the patient visits the health care facility was 94 ± 196 days (median: 30 days, range: 2 -2,190 days). On average, patients remained off from work for (median) 35 days (80 ± 120 days, range: 1 - 730 days). The mean income loss due to the illness and being remained from work was (median) 1200.00 birr. (3987.9 ± 9771.8 Birr).

One hundred thirty nine outpatient cases (65.3%) visited other health care facilities before they started their treatment at health institutions. The remaining 74 (34.7%) outpatient cases did not visited other health care facilities other than the current health institution as they started treatment. Based on the type of the health care facilities 54 (25.4%) and 82 (38.5%) outpatient cases visited private and government health care facilities respectively. A very small number i.e. 3 (1.4%) of outpatient cases visited traditional healer. The mean direct cost which includes costs for consultation fee, investigation, drugs, transportation and other expenditures (food and bed) was an average (median) of 376.(1010.3 ± 2025.9, range 3 – 13,922 Birr).

Forty seven point nine percent (102 of 213) of the outpatient cases received care from their families/friends before the identification of the disease and 83 care-givers remained from their work for the average (median) of 15 days. (Mean 62 days and SD of 126, range of 1 – 725).

Table:3 Average(Median) Direct and Indirect Costs for the Outpatient Cases before an d after the Identification of the Disease, Gondar Town, North Gondar, Ethiopia, 2014

Before Diagnosis	**Expenditure for TB Treatment*(Birr)***					
	Cost Category	**Mean**	**SD**	**Median**	**Minimum**	**Maximum**
	Consultation fee	***436.70***	1440.00	40.00	2.00	11,580.00
	Investigation	621.50	1331.30	184.00	5.00	10,000.00
	Drugs	349.90	554.80	173.00	12.00	3,000.00
	Transportation	105.50	140.70	50.00	2.00	900.00
	Other Total Costs	363.10	469.90	265.00	15.00	2.000.00
	Workdays lost and expenditures (Birr) by caring families and friends					
	Classification	***Mean***	***SD***	***Median***	***Minimum***	***Maximum***
	Workdays lost (Patient)	80.3	119.9	35	1	730
	Wage lost (Patient)	3987.90	771.80	1200.00	70	72,000
	Workdays lost(family)	62	126	15	1	725
	Wage lost (Family)	2905.80	5560.60	800.00	300.00	20,000.00
	Transportation (birr)	112.70	95.40	80.00	8.00	300.00
After Diagnosis	**Number of outpatient days, outpatient visits, lost workdays and wage lost**					
	Classification	***Mean***	***SD***	***Median***	***Minimum***	***Maximum***
	Outpatient days	90.2	69.4	63	30	510
	Outpatient visits	63.1	41.4	60	5	385
	Lost workdays	52.9	81.4	30	2	720
	Wage lost	1941.50	3,125.20	840.00	98.00	18,000.00
	Outpatient Expenditure for TB Treatment*(Birr)*					
	Cost Category	***Mean***	***SD***	***Median***	***Minimum***	***Maximum***
	Prescribed drugs	124.80	192.10	28.00	4.00	503.00
	Investigations	198.30	250.90	32.00	1.00	503.00
	Consultation fee	233.00	292.80	30.00	11.00	600.00
	Traditional medicine	406.70	687.00	10.00	10.00	1200.00
	Non-prescribed drugs	74.70	117.20	10.00	4.00	210.00
	Food	740.00	1018.20	740.00	20.00	1460.00
	Transportation	171.70	165.40	112.00	4.00	576.00
	Wage loss, transportation cost, and other expenditures by patients' families/friends					
	Cost Category	***Mean***	***SD***	***Median***	***Minimum***	***Maximum***
	Wage lost	1060.00	1393.90	500.00	200.00	3500.00
	Transportation	230.80	252.20	155.00	4.00	840.00
	Other Expenditure	507.00	431.20	321.00	200.00	1000.00

Patients' families/friends lost wages remaining home from work to give care for the patients. They lost on average 800.00. (2905.8 ± 5560.6 Birr, range: 300 -20,000). Transportation cost was 80 birr on average. (112.7 ± 95.4 Birr, range: 8.00 - 300). Families/friends also expended much on other expenditures (food and bed) which amounts 260.00 on average. (363.10 ± 469.90 Birr, range: 15.00 - 2000). The indirect cost before the identification of the disease includes wage lost by the patient and wage lost by their families/friends.

Generally, the average total cost of treatment before the identification of the disease (before diagnosis) was 885.00 birr (median). 2905.2 ± 7302.4Birr which include wages lost by the patient and their families/friends, consultation fee, investigation (Lab., X-ray, etc.), drugs, transportation cost and other expenditures (food and bed).

6.4. Costs Incurred by Outpatient Cases after Identification of the Disease

Two hundred thirteen outpatient cases were included in the analysis of costs after identification of the disease/diagnosis of TB and the average days (median) for outpatient treatment was 63. The average outpatient visits of the patient were 60 and lost work days and wages lost of the patient due to TB illness was an average of 30 days and 840 birr respectively.

Twenty three of 213 outpatient cases (10.8%) paid for treatment, prescribed drugs, or for tests after the identification of the disease (diagnosis of TB). See table 6. Costs on traditional medicine and non-prescribed drugs/medicine were not good indicator (representative) since the number of outpatient cases who used traditional medicine and non-prescribed medicine were only 3 and 3 respectively.

Of 213 outpatient cases, 70 (32.9%) received care from their families/friends during their treatment (after diagnosis of TB). Of 70 care-givers, 31 (14.6%) lost their workdays for average of 14 days (58 $\pm$ 141.7 days).

On the average (median) the care-givers lost 500.00 birr (1060.00 $\pm$ 1393.90 Birr, range: 200.00 - 3500.00) from lost days from work. Care-givers also expended a significant amount of money for transportation 155.00 birr (230.80 $\pm$ 252.20 Birr, range 4.00 – 840.00) and for other expenditures 321.00 birr (507.00 $\pm$ 431.00 Birr, range: 200.00 – 1000.00).

In general, the total average expenditure of outpatient cases themselves and/or their families after diagnosis (during treatment follow-up) was found to be 125.00 birr (913.8 $\pm$ 2244.20 Birr). This cost includes indirect cost (wage lost by the patients and their families) and direct costs (consultation fee, investigation, drugs, food and transportation costs).

6.5. Costs Incurred by Inpatient Cases before Identification/Diagnosis of TB

Twenty nine of 32 inpatient cases responded that the diseases sign and symptom had been with them for average 198.9 ± 202.5 days (median 120: range 16-720). Twenty inpatient cases (62.5%) had their own work and remained away from work for 203.5 ± 289.9 days (median 60, range: 7-1000). Nine of 20(28.1%) inpatient cases lost their wage due to the illness.

Out of 32 inpatient cases, 24 (75%) visited other health care facilities before their disease was identified and being hospitalized at GUH. The most frequently visited health care facilities were government health institutions (visited by 16 cases) and followed by private clinics (visited by 8 cases). The mean total direct cost which includes costs for consultation fee, investigation, drugs, transportation and other expenditure before diagnosis was 852.90 ± 1123.90 (median: 564.00, range: 20.00-4360.00) Birr.

Out of 32 inpatient cases, 23 (71.9%) received care from their families or friends. On average the care-givers (families/friends) remained from work for 183.6 ± 270.4 (median: 60, range: 0-1000) days. Twenty one out of 23 caregivers (families/friends) lost their wages for giving care for the patient. The mean total cost incurred by the inpatient cases and their families/friends before the identification of the disease was 1798.50 ± 1906.80 (median; 800, range: 20-6785) Birr and includes wages lost by the patient and their families, costs on consultation fee, investigation, drugs, transportation, and other expenditures.

Table:4 Average (Median) Direct and Indirect Costs for the Inpatient Cases before and after the Identification of the Disease, Gondar Town, North Gondar, Ethiopia, 2014

Before Diagnosis	**Complaints, Workdays lost and Wage Lost by the Inpatient Cases**					
	Classification	***Mean***	***SD***	***Median***	***Minimum***	***Maximum***
	Complaints (days)	198.9	202.5	120	16	720
	Workdays lost	203.5	289.9	60	7	1000
	Wage lost	1317..20	1164.90	1000.00	20.00	4,000.00
	Expenditure for TB Treatment*(Birr)*					
	Cost Category	***Mean***	***SD***	***Median***	***Minimum***	***Maximum***
	Consultation fee	569.70	1243.20	70.00	7.00	3,800.00
	Investigation	542.50	421.40	450.00	80.00	1500.00
	Drugs	268.7	220.30	223.50	75.00	700.00
	Transportation	100.90	77.50	80.00	24.00	300.00
	Other expenditure	30.00	30.00	30.00	30.00	30.00
	Workdays lost, Wage lost and Expenditures by Families/Friends of Inpatient Cases					
	Classification	***Mean***	***SD***	***Median***	***Minimum***	***Maximum***
	Workdays lost	183.6	270.4	60	0	1000
	Wage lost	1667.20	1140.90	2000.00	190.00	3130.00
	Transportation cost	138.20	166.70	85.00	20.00	600.00
	Other expenditure	1000.00	1000.00	1000.00	1000.00	1000.00
After Diagnosis	**Expenditure by Inpatient Cases during Hospitalization for TB Treatment*(Birr***					
	Cost Category	***Mean***	***SD***	***Median***	***Minimum***	***Maximum***
	Prescribed drugs	3040.00	4186.10	3040.00	80.00	6000.00
	Investigation	860.00	1023.50	560.00	20.00	2000.00
	Payment to the Hospital	20.50	21.90	20.50	5.00	36.00
	Traditional remedies	11.00	11.00	11.00	11.00	11.00
	Non-prescribed drugs	-	-	-	-	-
	Food expenditure	150.00	150.00	150.00	150.00	150.00
	Wage Lost and Expenditure of Patient Families/friends during Hospitalization					
	Cost Category	***Mean***	***SD***	***Median***	***Minimum***	***Maximum***
	Wage lost	2500.00	3672.00	1300.00	300.00	9000.00
	Transportation	66.60	47.50	58.00	20.00	140.00
	Other expenditure	145.00	7.10	145.00	140.00	150.00

6.6. Costs Incurred during Hospitalization of (after Dx) Inpatient TB cases

Inpatient TB cases stayed in the hospital for mean days of 75.7 ± 124.4 (median: 35, Range: 10-660). Twenty four out of 32 (75%) inpatient cases remained from their work for about 77.17 ± 144.4 days (median: 35, range: 15-720).

Twenty four of 32 (75%) inpatient cases lost wages being hospitalized which amounts to 1825.00 ± 1213.70 Birr (median: 1600, Range: 360.00-4000.00). During hospitalization, 9.4% (3 of 32) inpatient cases incurred costs for their treatment, prescribed drugs or tests. The mean total direct co st of hospitalization was 2907.00 ±4433.20 Birr (median: 565.00, Range: 136.00-8020.00 birr) which includes costs on prescribed drugs, investigation, traditional remedies, non-prescribed drugs, food expenditure and payment to the hospital.

Seventy five percent (24 of 32) inpatient cases received care from their families/friends while they were hospitalized. Ten care-givers (families/friends) remained from work to give care for the patients. Again 5 care-givers lost their wage as a result of lost workdays being in hospital to give care.

The mean total cost incurred by the patients and their families during hospitalization was 2907.40 ± 4433.20 Birr (median: 565.00, Range: 136.00-8020.00). The mean total cost before the identification of the disease and during hospitalization for the inpatient cases were 2809.40 ± 2693.00 (median: 1800.00, range: 360.00-9565.00 Birr).

Table 5: Summary of Median Direct and Indirect costs for the Outpatient and Inpatient Cases before and after the Identification of the Disease, Gondar town, May, 2014

Cost Category	Outpatient Cases			Inpatient Cases		
	Before Diagnosis	**After Diagnosis**	**Total**	**Before Diagnosis**	**After Diagnosis**	**Total**
Direct cost	376.00	249.00	**376.00**	564.00	565.00	**585.00**
Indirect Cost	1200.00	870.00	**2100.00**	1550.00	1600.00	**2550.00**
Total	**885.00**	**125.00**	**1219.00**	**800.00**	**1800.00**	**2562.50**

Binary and Multivariate logistic regression for Direct Cost of Tuberculosis

The binary logistic regression showed that direct cost of tuberculosis had significant association with Educational status, marital status, family size, family income, other health provider visiting, patient work days lost, family work days lost and payment for treatment and drugs.

In the multivariate logistic regression, family work days lost, marital status, family size, family income, patient work days lost and payment for treatment and drugs were not significantly associated with direct cost of TB. Educational status and other health providers visiting were significantly associated with direct cost of Tuberculosis in the multivariate logistic regression and became predictors of direct cost of tuberculosis.

Individuals (patients) who had not visited other health providers were 98.1% less likely to incur direct cost of Tuberculosis (AOR = 0.019, 95% CI = 0.002 to 0.216) than patients who had visited other health providers.

Patients families who had an educational status of at least read and write were 2.236 times more likely to incur direct cost of Tuberculosis (AOR = 2.236, 95% CI = 1.075 to 5.035) than patients who were illiterate.

Table 6: Factors associated with Direct Cost of Tuberculosis, Gondar town, Ethiopia, May 2014

Variables	Direct cost of TB		Sig	COR (95% CI)	AOR (95% CI)
	No	Yes			
Family Size					
1 – 5 family member	72	101		1	1
≥6 family member	12	28	0.178	1.663(0.793, 3.489)	0.512(0.094, 2.775)
Marital Status					
Single	48	61	0.356	1	1
Married	20	40	0.176	1.574(0.816, 3.025)	1.192(0.301, 4.717)
Others(separated, widowed, divorced)	16	28	0.385	1.377(0.669, 2.833)	6.025(0.642, 56.542)
Educational Status					
Illiterate	**28**	**27**		**1**	**1**
At least read and write	**56**	**102**	**0.045**	**1.889(1.015, 3.515)**	**2.236(1.075, 5.035)**
Family Income					
100 – 800 Birr	26	31	0.053	1	1
801 – 1214 Birr	25	25	0.651	0.839(0.392, 1.790)	0.136(0.013, 1.387)
1215 – 2000 Birr	20	34	0.360	1.426(0.667, 3.04)	0.305(0.036, 2.579)
≥2001	13	39	0.027	2.516(1.113, 5.68)	2.313(0.267, 20.001)
Other health provider visiting					
Yes	**22**	**117**		**1**	**1**
No	**62**	**12**	**0.000**	**0.036(0.017, 0.078)**	**0.019(0.002, 0.216)**
Family work days lost					
No family looked	14	29	0.027	1	1
Less or equal to 15 days	10	31	0.409	1.497(0.575, 3.895)	0.335(0.063, 1.766)
Greater or equal to 16 days	60	69	0.112	0.555(0.269, 1.147)	0.274(0.036, 2.110)
Patient work days lost					
Less or equal to 30 days	62	104		1	1
Greater or equal to 31 days	22	25	0.243	0.677(0.352,1.302)	0.607(0.100, 3.679)

N: B: Only bold variables are significant in multivariate logistic regression

Binary and Multivariate logistic regression for Indirect Cost of Tuberculosis

The binary logistic regression showed that the indirect cost of tuberculosis had significant association with age, gender, educational status, marital status, family size, family income, and family support, patient work days lost before and after the identification of tuberculosis.

In the multivariate logistic regression, age, family size, family income, and family support, patient work days lost before and after the identification of tuberculosis were not found significant. Educational status, marital status and gender were significantly associated with indirect cost of tuberculosis and became predictors of indirect cost of tuberculosis.

Patients who had an educational status of at least read and write were 2.685 times more likely to incur indirect cost of Tuberculosis (AOR = 2.685, 95% CI = 1.173 to 6.147) than patients who were illiterate.

Females were 82% less likely to incur Indirect cost of tuberculosis (AOR = 0.180, CI = 0.045 to 0.725) compared to males. Married patients were 71.3% less likely to incur indirect cost of tuberculosis (AOR = 0.287, CI = 0.120, 0.690) compared to single or never married.

Table 7: Factors associated with Indirect Cost of Tuberculosis, Gondar town, Ethiopia, May 2014

Variables	Indirect cost of TB		Sig	COR(95% CI	AOR(95% CI)
Sex					
Male	**60**	**54**		**1**	**1**
Female	**71**	**28**	**0.050**	**0.438(0.247, 0.776)**	**0.180(0.045, 0.723)**
Age					
15 – 24	42	21	0.082	1	1
25 – 34	38	38	0.049	2.000(1.003, 3.989)	2.499(1.086, 5.751)
35 – 44	27	11	0.646	0.815(0.340, 1.955)	1.571(0.527, 4.681)
≥45 years	24	12	1.000	1.000(0.420, 2.384)	1.767(0.537, 5.815)
Marital status					
Single	**58**	**51**	**0.013**	**1**	**1**
Married	**46**	**14**	**0.003**	**0.346(0.351, 0.702)**	**0.287(0.120, 0.690)**
Others (separated, widowed, divorced)	27	17	0.359	0.716(0.351, 1.462)	0.605(0.245, 1.499)
Educational status					
Illiterate	**44**	**11**		**1**	**1**
At least read and write	**87**	**71**	**0.002**	**3.264(1.571, 6.783)**	**2.685(1.173, 6.147)**
Family size					
1 – 5 family member	103	70		1	1
≥6 family member	28	12	0.223	0.631(0.300, 1.323)	0.787(0.334, 1.853)
Family income					
100 – 800 Birr	28	29	0.098	1	1
801 – 1214 Birr	35	15	0.030	0.414(0.186, 0.918)	0.395(0.161, 0.970)
1215 – 2000 Birr	37	17	0.040	0.444(0.205, 0.962)	0.529(0.222, 1.259)
≥2001	31	21	0.273	0.654(0.306, 1.398)	0.525(0.221, 1.250)
Patient work days lost before diagnosis					
Less or equal to 35 days	108	46		1	**1**
Greater or equal to 36 days	23	36	0.000	3.675(1.964, 6.878)	2.200(0.943, 5.131)
Family support					
Yes	69	33	0.078	0.605(0.343, 1.058)	0.513(0.262, 1.005)
No	62	49		1	1
Patient work days lost after diagnosis					
Less or equal to 30 days	112	54		1	1
Greater or equal to 31 days	19	28	0.001	3.057(1.569, 5.955)	2.024(0.801, 5.113)

7. DISCUSSION

Tuberculosis affects mostly economically active population in underdeveloped and developing countries; therefore TB can have far reaching economic and social consequences among infected people and their household members (14).

In this study, 92.5% of outpatient cases and 93.8% of inpatient cases were on the age group of economically productive individuals. Thus tuberculosis has the potential to hinder the development of both individuals and the society and therefore puts families at risk for poverty and creates tremendous implications for gross domestic product (GDP. (15). It is well known that adults aged 15 to 59 years are the most economically productive individuals. These age group individuals are also parents on whom the survival and development of children depend. This study documented the overall costs incurred by patients and their families.

The study revealed that majority of the outpatient cases (25.8%) and inpatient cases (34.4%) were illiterate. This indicates that illiterate individuals might not have enough knowledge on how to prevent tuberculosis. This study showed that, an educational status of at least read and write contributed for patients and their families to incur both direct and indirect costs of tuberculosis. This might be due to, as educational level of an individual increases, early visiting of health facilities for health seeking increases and this may lead to incur costs.

This study showed that 60.6% of the outpatient cases incurred direct cost for TB treatment which was higher than a study conducted in Lusaka, Zambia (34%) and 38.5% of the study outpatient cases incurred indirect cost for TB treatment which was smaller than a study conducted in Lusaka, Zambia (62%) (19), these differences might be due to differences in study settings or due to economical status of populations in which the study were conducted.

The study indicated that a large amount of patients and their families expenditure occurred before the patient was actually diagnosed and started the treatment of tuberculosis. The main reason for this high amount of expenditure might be the long period of delay from the onset of the disease to the first visit the patient made to health care facilities (patient delay). Longer patient delays between first experience of symptoms and first health service encounter were also associated with higher costs (19).

The mean delay periods observed in this study was 93.5 ± 195.5 days (range: 2 – 2190) which was low compared with a study conducted in west Gojam zone, which was 153 ± 215 days (range: 5-1,825 days) (28). It was also high compared with a cross-sectional survey conducted in Rungwe district, Tanzania which showed that the mean patient delay was 64.8 days (9); this might be due to differences in the design of the study or development status of the countries.

This study showed that, both the average (median) direct and indirect costs incurred by inpatient cases were higher than costs incurred by outpatient cases. This was mainly because of hospitalization. The mean direct cost incurred by the outpatient cases and their families was in consistence with a study conducted in Gojjam, Ethiopia (28) but the mean indirect cost incurred by the outpatients and their families was higher than the indirect cost incurred in the previous study in Ethiopia (28) this could be due to differences in economical status of patients of the studies.

In this study, an outpatient case could expend an average of a one month family income and an inpatient case expends an average of a two month family income for the diagnosis and treatment of tuberculosis. This could lead patients and their families to abandon other expenditures for education, shelter and other necessities. This again could have other implications, consequences or problems in the short-term or long-term.

In this study visiting of other health providers had a significant association with direct cost of tuberculosis, and in outpatient cases, costs incurred by patients and their families before diagnosis or identification of the disease were higher than costs incurred after diagnosis or identification of the disease. This could be due to patient visits to different health care facilities in seeking cure from their illness and thus paying much for their treatment especially it is costly to visit private health care facilities in our settings (ref). In addition; this could indicate that poor detection system from health care facilities and delay in the identification of the disease lead to high economic burden and economic loss to patients and their families.

This study showed that, majority of outpatient cases had lost less than one month of work and about a quarter of the outpatient cases had also lost more than one month of work before treatment of Tuberculosis. It was also found that most of the patients lost less than 30 days of work during treatment which was high compared to other study conducted in India (26%) (29), the possible reason for this might be the main occupation status between the study participants.

One hundred thirty nine of 213 outpatient cases (65.2%) and 24 of 32 inpatient cases (75%) were found to be visited health care facilities before their disease was actually diagnosed/identified and started their treatment at the current health institution. A significant number of patients (25.4% of outpatient cases and 33.3% of inpatient cases), although ultimately diagnosed and treated at current public health facilities were found to be seeking a diagnosis in private health care facilities which could lead to high expenditure.

This study showed that, female respondents which incur indirect costs were very low than males, this might be because of decision making power of males or because of high prevalence of TB in males than females. (30)

In recent times, economic issues have a growing importance in the health care field. This study clearly documented the cost of illness of tuberculosis to patients and their families and the resultant costs incurred by them. The results of this study may be used to develop new approaches for policy makers, potential donors, and health service personnel towards more cost-effective promotion of tuberculosis control programme.

Limitations of the Study

The major limitation of the study was that the study was not a prospective study due to time constraints. Therefore, the data collected might not be as accurate as if it were prospective study i.e. there might be recall bias from participants. The other limitation of the study was inadequate sample size because of short data collection period which contributed to lose significant variables and since the inpatient cases were very small, they were not included in the analysis.

8. CONCLUSION

The study demonstrated that among the 245 study population (154 outpatient case and 24 inpatient cases) in health institutions of Gondar Town, average costs of tuberculosis to patients and their families were very high when compared with the mean family monthly income.

The study also showed that a large amount of patients and their families expenditure occurred before the patient was actually diagnosed and started the treatment of tuberculosis and also costs of tuberculosis to patients and their families were higher in inpatient cases than outpatients after diagnosis (during treatment) because of hospitalization.

The costs of tuberculosis diagnosis incurred by patients and their families represent a significant portion of their monthly income. The costs arising from work days lost in seeking care, educational status of other than illiterate, marital status, care givers income lose due to the illness and other health providers visiting were major predictors of direct and indirect costs of tuberculosis to patients and their families.

9. RECOMMENDATIONS

This study revealed that the following recommendations could be important to alleviate the burden of cost of tuberculosis to patients and their families:

1. Regional health bureau or Zonal health department should train community health workers in rural areas to recognize the signs and symptoms of tuberculosis in order to refer the patient to the proper diagnostic facility earlier, to prevent the unnecessary spread of undiagnosed cases of TB and to avoid delays to reach to the health facility
2. In health institutions, there should be increased focus on early diagnosis and treatment of TB which is imperative in limiting the spread of this highly infectious disease in order to minimize the costs incurred by patients and their families in seeking cure from their illness.
3. Advocacy, public education activities and mobilization on the symptoms of tuberculosis and means of prevention of the disease should be carried out and hence patients could seek medical service early and minimize unnecessary costs incurred.
4. For researchers, prospective studies should be conducted on which patients are followed for an appropriate period of time which could give better estimate of costs incurred by patients and their families.
5. In addition, further studies on economic burden of tuberculosis in other settings or areas should be conducted to strengthen the findings and to have a better estimate country wide.
6. Policy makers should find solutions to decrease direct and indirect TB costs to prevent poverty due to TB treatment and care for those affected by the disease**.**

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ANNEX 1

Information Sheet and Consent Form for Cost of Illness of Tuberculosis to Patients and Their Families, North Gondar Zone, Amhara National Regional State, Ethiopia

UNIVERSITY OF GONDAR

Name of the Principal Investigator: Fana Nigatu Yesuf

Name of the organization: University of Gondar

Name of the Sponsor: Amhara National Regional State

Information Sheet and Consent Form prepared for participants from health institutions of Gondar Town, North Gondar Zone, Amhara National Regional State, Ethiopia that studies Cost of Illness of Tuberculosis to Patients and Their Families

Introduction

This information sheet and consent form is prepared by the investigator whose main aim is to study **the cost of illness of Tuberculosis to patients and their families in Gondar town health institutions, North Gondar Zone, Amhara National Regional State, Ethiopia**. The investigator is MPH student from University of Gondar

Purpose: The purpose of this research is to assess the cost of illness of Tuberculosis to patients and their families in Gondar town health institutions, North Gondar Zone, Amhara National Regional State, Ethiopia.

Therefore, the findings of the study will provide valuable cost of illness information on tuberculosis to the health care planners, managers and the society, so that they have a clear understanding of the diseases burden that is used in giving priority in case of resource allocation. It will also serve as a baseline data for further research in this aspect.

Procedure: In order to assess **the cost of illness of Tuberculosis on health institutions of Gondar town, in North Gondar Zone, Amhara National Regional State, Ethiopia**, we invite you to take part in our project. If you are willing to participate in our project, you need to understand and sign the consent form. Then, you will be asked to give your response by the data collectors. For this questionnaire based study, participants are all TB patients and their care takers (15 years of age and above) during the study period. All the responses given by the participants and the results obtained will be kept anonymous and confidential using coding system whereby no one will have access to your responses.

Risk and/or Discomfort: By participating in this research project you may feel that it has some discomfort specially on wasting your time (**about 30-40 minutes**) but this may not be too much as you are going to health institutions for you and your family health care and comparing its potential benefits it contributes to the overall improvement of the health status of the community. There is no risk in participating in this research project.

Benefits: If you participate in this research project, you may not get direct benefit but your participation is likely to help us in assessing the cost of illness of Tuberculosis to patients and their families and in identifying factors affecting these issues on institutions of Gondar town, North Gondar Zone, Amhara National Regional State, Ethiopia.

Incentives: You will not be provided any incentives to take part in this project.

Confidentiality and Anonymity: The information that we will collect from this research project will be kept confidential. Information about you that will be collected from the study will be stored in a file, which will not have your name on it, but a code number assigned to it. Which number belongs to which name will be kept under lock and key, and it will not be revealed to anyone except the principal investigator.

Right to Refuse or Withdraw: You have the full right to refuse from participating in this research (you can choose not to respond some or all of the questions) if you do not wish to

participate; and this will not affect your health services you get at from any health facilities. You have also the full right to withdraw from this study at any time you wish to, without losing any of your rights as a resident of this site.

Persons to contact: If you have any question you can contact any of the following individuals and you may ask at any time you want.

1. ***Fana Nigatu Yesuf:*** Wogera District Health Office, North Gondar Zone Health Department
   Tel: +251 581 180011/ +251 918 736728
   E-mail: fananigatu@gmail.com

2. ***Mezgebu Yitayal Mengistu:*** Institute of Public Health Sciences, University of Gondar
   Tel: +251 581 116221/ + 251 920 252761
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3. ***Tirsit Mehari:*** Institute of Public Health Sciences, University of Gondar
   Tel: +251 581 116221/ +251 911 818622
   E-mail: tirsitmehari@gmail.com

Field Code Changed

CONSENT FORM

INFORMED CONSENT

Hello. My name is _____ and I am part of a team of people who are carrying out a study on "Cost of illness of Tuberculosis to Patients and their Families: A Cross-sectional Study at Health centers in Gondar town, North Gondar Administrative Zone`` (Show a letter of approval). We would very much appreciate your participation in this study. I would like to ask you some questions and it will take about 30 minutes. Your answers will remain confidential, and we will not be taking down your name or address, so your answers will be anonymous.

Participation in this study is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this study since your views are important.

At this time, do you want to ask me anything about the survey?

May I begin the interview now?

Start time:_____ End time:_____ Date_____/____/_____

Respondent Agrees To be Interviewed_____1

Respondent Does Not Agree To be Interviewed _____2

Name of Data collector: _____
Signature_____

Name of Supervisor: _____
Signature_____

ANNEX 2

QUESTIONNAIRE FOR COST ESTIMATION OF OUTPATIENT TB CASES ONLY
Questionnaire Number: _____

Patient TB Number*:* _____

Section1. Socio-economic and Demographic Characteristics

Ser. No	Questions	Possible answers and coding	Skip
101	Sex	1. Male 2. Female	
102	How old are you?	1. _____years 98. I don't know 99. Refused to tell	
103	What is your marital status?	1. Single (never been married) 2. Married 3. Separated 4. Widowed 5. Divorced 6. Other (specify)_____	
104	What is your educational status?	1. Illiterate 2. Read and write only 3. Grade 1-6 (primary education) 4.Grade 7-8 (junior secondary education) 5. Grade 9-12 (senior secondary education) 6. College, university 7. Other (specify)_____	
105	What is your religion?	1. Ethiopian Orthodox Tewahdo 2. Muslim 3. Catholic 4. Protestant 5. Other (specify)_____ 99. Refused to tell	
106	What is your ethnicity?	1. Amhara 2. Tigrie	

		3. Agaw 4. Other (specify)_____ 99. Refused to tell	
107	What is your main occupation (Past twelve months)?	1. Unemployed 2. Retired 3. Pupil/ student 4. Disabled/ sick 5. House wife 6. Merchant 7. Daily laborer 8. Employed by government 9. Employed private for profit sector 10. Employed by NGO 11. Self-employed, business with employees 12. Self-employed, business no employees 13. Self-employed, farmer/ fishing 14. Other (specify_____	
108	Number of people living in your family?	1. _____ 99. Refused to tell	
109	How many are employed/ working at the moment?	1._____ 99. Refused to tell	
110	What is their regular total monthly income?	1._____ 98. I don't know 99. Refused to tell	
111	What is your monthly income?	1. _____Birr or _____in Kind 98. I don't know 99. Refused to tell	
112	What is your monthly expenditure?	1. _____Birr or _____in Kind 98. I don't know 99. Refused to tell	

Section2: Costs of Tuberculosis before Diagnosis

Ser. No	Questions	Possible answers and coding	Skip
201	How long did you have your complaints before becoming a patient at this health institution?	1. _____ days 98. I don't know 99. Refused to tell	
202	How many days had you remained from work?	1. _____ days 98. I don't know 99. Refused to tell	
203	Amount of wages lost for days lost from work	1. _____Birr 98. I don't know 99. Refused to tell	
204	Did you visit any other providers before diagnosis of TB?	1. yes 2. No	If no, Skip to Q 214
205	If yes to Q 204, number of health services/providers visited before diagnosis?	1. _____ 98. I don't know 99. Refused to tell	
206	Which health services did you visit?	1. Government 2. NGO 3. Private 4. Traditional Healer 5. other (specify)_____	
207	Total cost of consultation fees	1. _____Birr 98. I don't know 99. Refused to tell	
208	Total cost of Investigations (laboratory, X-ray, etc)	1. _____Birr 98. I don't know 99. Refused to tell	
209	Total cost of drugs purchased	1. _____Birr 98. I don't know 99. Refused to tell	
210	What is the means of transportation to get to the	1. On foot 2. On animal Back	

	health facilities?	3 . Taxi/bus 4. Other(specify)_____	
211	How long does it take you to get the health services site?	1. _____hours or _____minutes 98. I don't know 99. Refused to tell	
212	Total cost of Transportations	1. _____Birr 98. I don't know 99. Refused to tell	
213	Other total costs	1. _____ Birr 98. I don't know 99. Refused to tell	
214	Has anyone from your family or friends looked after you prior to coming here?	1. Yes 2. No	If no, skip to Q 301
215	If yes to Q 214, number of days lost from work to accompany You?	1. _____ days 98. I don't know 99. Refused to tell	
216	If yes to Q 214, what is their monthly income?	1. _____ Birr 98. I don't know 99. Refused to tell	
217	If yes to Q 214, Do any of the care-givers lose any income because they cared for you?	1. Yes 2. No	
218	If yes to Q 214, amount of wages lost per days lost from work?	1. _____ Birr 98. I don't know 99. Refused to tell	
219	What is the means of transportation for caregivers to get to the health facility?	1. On foot 2. On animal Back 3. Taxi/bus 4. Other(specify)_____	
220	How long does it take them to get the health services site?	1. _____hours or _____minutes 98. I don't know 99. Refused to tell	
221	If yes to Q 214, amount of	1. _____ Birr	

	cost for transportation?	98. I don't know 99. Refused to tell	
222	If yes to Q 214, amount of cost for other expenditures?	1. _____ Birr 98. I don't know 99. Refused to tell	

Section3. Costs of Tuberculosis after Diagnosis as an Outpatient

Ser. No	Questions	Possible answers and coding	Skip
301	How long have you been an outpatient for TB treatment?	1. _____ days 98. I don't know 99. Refused to tell	
302	How many outpatient visits have you had in that time?	1. _____ 98. I don't know 99. Refused to tell	
303	How many days have you remained from work being an outpatient?	1. _____ days 98. I don't know 99. Refused to tell	
304	Amount of wages lost for days lost from work	1. _____Birr 98. I don't know 99. Refused to tell	
305	Did you have to pay anything for your treatment, prescribed drugs or tests since you have been an outpatient?	1. Yes 2. No	If no, skip to 315
306	If yes, How much have you spent on prescribed drugs while you were an outpatient?	1. _____Birr 98. I don't know 99. Refused to tell	
307	If yes, How much have you spent on investigations while you were an outpatient?	1. _____Birr 98. I don't know 99. Refused to tell	
308	If yes, How much have you spent on other items, (Doctors payments, registration cards, clothing	1. _____Birr 98. I don't know 99. Refused to tell	

	etc)?		
309	If yes, How much have you spend on traditional medicines?	1. _____Birr 98. I don't know 99. Refused to tell	
310	If yes, How much have you spent on any other non-prescribed remedies?	1. _____Birr 98. I don't know 99. Refused to tell	
311	If yes, How much have you or any visitors spent on your food?	1. _____Birr 98. I don't know 99. Refused to tell	
312	What is the means of transportation to get to the health facility (FHRH)?	1. On foot 2. On animal Back 3. Taxi/bus 4. Other(specify)_____	
313	How long does it take you to get the health services site?	1. _____hours or _____minutes 98. I don't know 99. Refused to tell	
314	Total cost of Transportations	1. _____Birr 98. I don't know 99. Refused to tell	
315	Has anyone from your family or friends looked after you during your treatment?	1. Yes 2. No	
316	If yes to Q 315, number of days lost from work to accompany You?	1. _____ days 98. I don't know 99. Refused to tell	
317	If yes to Q 315, what is their monthly income?	1. _____ Birr 98. I don't know 99. Refused to tell	
318	If yes to Q 315, Do any of the care-givers lose any income because they cared for you?	1. Yes 2. No	
319	If yes to Q318, amount of wages lost per days lost from work?	1. _____ Birr 98. I don't know 99. Refused to tell	
320	What is the means of	1. On foot	

	transportation for caregivers to get to the health facility?	2. On animal Back 3. Taxi/bus 4. Other(specify)_____	
321	How long does it take them to get the health services site?	1. _____hours or _____minutes 98. I don't know 99. Refused to tell	
322	If yes to Q 318, amount of cost for transportation?	1. _____ Birr 98. I don't know 99. Refused to tell	
323	If yes to Q 318, amount of cost for other expenditures?	1. _____ Birr 98. I don't know 99. Refused to tell	

THANK YOU FOR YOUR TIME AND COOPERATION!

የምርምር ፕሮጀክቱ ርዕሰ፡ **በአሜሪ ብሔራዊ ከልላዊ *መ*ግስት፤ ucT@" Ô"Å` µ"&Ô"Å` Ÿ}T uT>Ñ–< Ö?" É`Ï„‹& ¾d"v 'k`d ulSU}™‹" u›eታTT>–‰†¨< LÃ ¾T>ÁSx¨< ¾›=¢•T> Ý" U" Å"ÅT>SeM KT¨p ¾T>Å[Ó Ø"ƒ**

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የስፖንሰሩ ድርጅት ስም: ***የአሜሪ ከልል ጠፍ ቢሮ***

ይህ ማበራሪያና የስምማ ት መግለጫቅጽ የተዘጋጀው Ô"Å` Ÿ}T –eØ vK< Ö?" É`Ï„‹ KT>Ñ–<ƒ ¾Ø"~ }dታ›‹ c=J" Ø"~U ¾d"v 'k`d ulSU}™‹" u›eታTT>–‰†¨< LÃ ¾T>ÁSx¨<" ¾›=¢•T> Ý" T¨p '¬::

***መ*ግቢያ**

የዚህ የምርምር ማበራሪያና የስምማ ት ቅጽ የተዘጋጀዉ uጎንደር ዩኒቨርሲቲ ¾Ö?" ›Övup ›="e+ƒ¿ƒ የደህረ ምረቃ (›?U.ú,›?‹) ተማሪ c=J'ን ዋና አላማጀም በአሜሪ ብሔራዊ ከልላዊ *መ*ንግስት፤ ucT@" Ô"Å` µ"&Ô"Å` Ÿ}T uT>Ñ–< Ö?" É`Ï„‹& ¾d"v 'k`d ulSU}™‹" u›eታTT>–‰†¨< LÃ ¾T>ÁSx¨<" ¾›=¢•T> Ý" T¨p '¬::

የምርምር ፕሮጀክቱ ዓላማ

የዚህ ጥናት ዓላማ የቲቪ. ህ*መ*ም በጎንደር ከተማ በማ ኙ የቲቪ. ህ*መ*ማኞና በቤተሰቦቻቸዉ ላይ የሚያመጣዉን ተጽዕኖ ማጥናት ሲሆን የጥናቱ ዉጤትም የቲቪ. ህመም ስለሚያሳድረዉ የኢኮኖሚ ተጽዕኖ ትክክለኛ መረጃ ለጤና አገልግሎት ዕቅድ ባለሙያወች፤ለሰራ አሰኪያጆች እና ለማህበረሰቡ በመስጠት ስለ በሽታው አሰከፊነት እና ተፅዕኖ ግልፅ የሆነ እውቅና እንዲኖራቸው በማድረግ በሀብት አመዳደብ ላይ ቅድሚያ እንዲሰጡ ማድረገ እንዲሁም ከዚህ በኋላ ለሚካሄዱ ተመሳሳይ ጥናቶች እንደመነሻ መረጃ በመሆን ሊያገለግል ይችላል፡፡

የአሰራር ሂደት

በአሜሪ ብሔራዊ ከልላዊ *መ*ንግስት፤ ucT@" Ô"Å` µ"& Ô"Å` Ÿ}T uT>Ñ–< Ö?" É`Ï„‹& ¾d"v 'k`d ulSU}™‹" u›eታTT>–‰†¨< LÃ ¾T>ÁSx¨<" ¾›=¢•T> Ý" KT¨p uT>"H@Å¨< Ø"ƒ LÃ እርeዎ እንዲሳተፉ ጋብዘንዎታል፡ ፡ በዚህ ጥናት ወስጥ ለ*መ*ሳተፍ ከተስማሙ ስምማ ቱን በደንብ ሚዳትና እንዲሁም ሜ.ረም ይገባዎታል፡ ፡ ከዚያ በ*መ*ጠል በጥናቱ ሚጃ ሰብሳቢዎች ለሚከየቁት ጥያቄ እንዲመልሱ ፈቃደኝነ ትዎ ይጠየ ቃል፡ ፡

በዚህ ጥናት የሚ ተፉት ጠፍ ድርጅቶች ላይ የምገ ኛቸዉ የቲቪ. በሽተኞችና ቤተሰቦቻቸዉ ወይም አስታ*መ*ሞዎቻቸዉ ሲሆኑ የሚሥጡት *መ*ልስም ሆነ የሚ ኘው ዉጤት በT>eØር ይጠበቃል፡ ፡

ሊከሰቱ የሚችሉ ስጋቶችና ምቾት *መ*ዳደሎች

በዚህ ጥናት *መ*ሳተፍዎ ምናልባት ጊዜዎን ሊሸማበዎ ይችል ይሆናል፡ ፡ ነገር ግን ¾Ö?" ›ÑMÓKAƒ KTÓ–ƒ ዘወትር ወደ Ö?" ›ÑMÓKAƒ cÜ É`Ï„‹ ከ*መ*ጣለስዎና የጥናቱ ዉጤት ወደፊት Klw[}cu< ከሚሥጠው ጥቅም አንጻር ይህን ያህል አይደለም፡ ፡ በዚህ ጥናት በ*መ*ሳተፍዎ ምንም ዓይነት ስጋት (ችግር) አያጋጥምዎትም፡ ፡

ጥቅሞች

በዚህ ጥናት በመሳተፍዎ የተለየ ጥቅም አያገኙም፡ ነገር ግን የእርeዎ በጥናቱ መሳተፈዎ ቀጥተኛ የሆነ ጥቅም ላያገኙ ይችላሉ ነገርግን ተሳትፎወት የቲቪ በሽታ በቲቪ ህመማን እና በቤተሰቦቻቸው ላይ የሚዳድረወን የኢኮኖሚ ተፅዕኖ ለተፅዕኖው አስተዋፅኦ የሚደርጉ ነገሮችን ለመለየት ትልቅ ድርሻ ይኖረዋል፡፡

ማክካሻ

በዚህ ጥናት በመሳተፍዎ ምንም ዓይነት ማክካሻ አይሥጥዎትም፡ ነገር ግን በጥናቱ በመሳተፍዎ ምክጋናችን ከፍተኛ ነው፡፡

T>ስወር ስለማጠበቅ

ከዚህ ጥናት የሚኝ መረጃ በማኑ በT>eØ^©'ት ይጠበቃል፡፡. ለዚህ ጥናት የሚያበሰበ¨< እርeዎ" የሚሞከት መረጃ በማደር የሚቆመጥ ሲሆን ማህደሩም በስህዎ ሳይሆን በተለየ ኮድ ሲቀመጥ ኮዱ ከዋናው ተመራሚ ውጭ ለማንም አይገለጽም፡፡

በጥናቱ ያለመሳተፍ ወይም ራስን የማግለል መብት

በጥናቱ ላለመሳተፍ ከፈለጉ በዚህ ጥናት ያለመሳተፍ& ወይም ከአንድ በላይ ወይም ሁሉንም ጥያቄዎች አለመመለስ ይችላሉ፡፡ በዚህ ጥናት ባለመሳተፍዎ ወይም በከፊልም ሆነ በሙኑ ጥያቄዎችን ባለመመለስዎ አ"Å ³ª]'ƒ- ¾T>ÁÑ–<ƒን አገልግሎት አይከለከሉም፡፡

መረጃ ሰፈልጉ የሚከይቋቸው ሰዎች

ይህ ጥናት የጥናቱ ተሳታፊዎች ከጉዳት መጠበቃቸወን በሚረጋግጠው ጎንደር ዩኒቨርሲቲ በሚኝው ኮሜቴ ታይቶ ድጋፍ አግኝቷል፡፡ በጥናቱ ዙሪያ ማንኛውም ጥያቄ ካለዎት ከሚከተሉት ወሰጥ ማንኛወንም ሠው በሜለጉት ጊዜ ማነጋገር ይችላሉ፡፡

1. ó“ ”Ò~ ¾c<õ: ¨Ñ^ ¨[Ç Ö?“ Øun ê/u?ƒ
   ስልክ ቁጥር +251 58 118 0011/ +251 918 736728
2. S'Ñu< ÃታÁM S”Óe~: Ô”Å` ¿'>y`c=+
   ስልክ ቁጥር +251 58 111 6221/ +251 920 252761
3. ƒ`c=ƒ SN]: Ô”Å` ¿'>y`c=+

eM¡ lØ`: +251 581 116221/ +251 911 818622

ይህንን ቅጽ አንብበወት ከሆነና አሁንም ሆነ በሉላ ጊዜ ጥያቄ የማቀቅ እድል ተሠጥ„ዎ ከሆነ ወይም ይህ ቅጽ ተነቦና ተብራርቶለዎት ከሆና ለመሳተፍ ከተስማሙ እባክዎ ስህዎንና ፊርማወን ከዚህ በታች ያስቀምጡ፡

የተሳታፊ ስም _____

የስምማት ተቀባይ ፊርማ _____ ቀን _____

ተሳታፊው ማንበብና መጻፍ የሚችል ከሆነ &

የምክር eU _____

የምክር ፊርማ _____ ቀን _____

¾eUU'ƒ pê

Ö?“ ÃeÖM˜ ƛ'@ eT@ ---------- ÃvLM:: uÔ”Å` Ÿ}T uT>Ñ'–< Ö?“ ×u=Á¨‹ LÃ ¾d”v 'k`d ulSU}™‹“ u›e;Ƶ'TT>-‰†¨< LÃ ¾T>ÁS×¨<” ¾›=¢*T> Ý“ KT¨p uT>"H@Å¨< Ø“ƒ LÃ }d;Ƶò ˜::

u²=l Ø“ƒ LÃ uSd}õ- Ÿõ}— ¾J' ›É“qƒ Ã*[“M :: K²=l Ø“ƒ Ã[Ç” ²”É 30 Åmn ÑÅT ¾T>¨eÉ ØÁo-‹” MÖÃk-ƒ ƛðMÒKG<:: ¾T>cÖ<” SMe uUeÖ=` ¾T>Öup c=J” eU-”“ ›É^h-” uSÖÃl LÃ ›”ÖpeU::

u²=l Ø“ƒ LÃ Sd}õ u`e- S<K< ðnÅ˜ƒ LÃ ¾}Sc[¦ c=J” ›”É ØÁo ¨ÃU G<K<”U ØÁo-‹” ›KSSKe Ã‹LK<:: 'Ñ` Ó” ¾ƛ`e- ›e}Á¾ƒ ¨ÃU SMe ÖnT> eKJ' uØ“~ LÃ Ãd}óK< wK” }eó *ƛ“Å`ÒK”::

›G<” eK Ø“~ T“†¨<”U 'Ñ` K=ÖÃl˜ ÃðMÒK<;

›G<” SÖÃl” SËS` *ƛ‹LKG<”;

SËS]Á c¯ƒ ---------- SÚ[h c¯ƒ ---------- k” ----------

SMe cÜ¨< (ª) KSÖÃl SMe cÜ¨< (ª) KSÖÃl

}eTU}ªM ---------- ›M}eTS<U ----------

¾S[Í cwdu=¨< eU ---------- ò`T ----------

¾}q××]¨< (ª) eU ---------- ò`T ----------

¾d”v ’k`d lS<T” ¾S¿ŸT>Á Ñ”²w SÑS‰ SÖÃp

K}SLLi ¾d”v ’k`d lS<T”◆¿"T>–‹ w‰

SÖÃp lØ` ----------

¾d”v ’k`d lSU}— SKÁ lØ` ----------

¡õM 1 ›ÖnLÃ ¾ÓKcu< (¾ui}—¨<) S[Í

101. ï¿*:- 1. ¨”É ---------- 2. c?ƒ ----------

102. °ÉT@:- 1. ---------- ¯Sƒ

98. ›L¨<k¨<U ---------- 99. SSKe ›MðMÑ<U -------

103. ¾Òw‰ G<’@¿*:-

1. ÁLÑv ---------- 2. ÁÑv (›wa ¾T>*`) ----------

3. }KÁÃ}¨< ¾T>*\ ---------- 4. vLD (T>e~) ¾V}uƒ ----------

5. ¾}ó,ታ(ች)* ---------- 6. K?L "K ÃÓKê ----------

104. ¾ƒUl`ƒ G<'@,ታ (ÁÖ"kk/ ÁÖ"kk‹)

1. ÁM}T[----- 2. T"uw" Síõ w‰ --------

3. Ÿ1— -6— ¡õM --------- 4. Ÿ7— -8— ¡õM -------

5. Ÿ9— - 12— ¡õM ------- 6. ¢K?Ï ¿'>y`e+ --------

7. K?L "K ÃÓKê ----------

105. GÃT*ƒ- U"É" '¬;

1.*`„Ê¡e }ªlÊ 2.S<eK=U 3. ካ„K=¡ 4. ፕሮቴስታንት

5. ሌላ ካለ ይገለጽ---------- 99. ለመናገር አልፈለጉም

106. የምን ተምላጅ ነዎት?

1. አማራ 2. ትግራይ 3. አገዉ

4. ሌላ ካለ ይገለጽ ---------- 99. ለመናገር አልፈለጉም

107. K›Kñƒ 12 ¨^ƒ ª'— e^- U"É" '"<;

1. e^ ›Ø ---------- 2. Ö<[}— ----------

3. }T] ---------- 4.. Se^ƒ ¾TÃ‹M / lSU}----------

5. ¾u?ƒ *ÅSu?ƒ ------- 6. 'ÒÈ ----------

7. ¾k" c^}--------- 8. ¾S"Óeƒ }k×] ----------

9. ¾ÓM É`Ïƒ }k×] ----- 10. S.Á.É }k×] ----------

11. ¾^c< É`Ïƒ c^}— ÁK<ƒ----- 12. ¾^c< É`Ïƒ c^}— ¾K?K<ƒ ---

13. u^c< }k×] Ñu_ /›LeÒ] ---- 14. K?L "K ÃÓKê ----------

108. uu?}cw- ¨<eØ ¾T>Ñ–< ¾c-‹ w³ƒ:-

1. ---------- c-‹ 99. S“Ñ` ›MðkÆU ----------

109. Ÿu?¦cw- ¨<eØ u›G<'< e”„‡ ¦k×] “†¨<; ¨ÃU uY^ LÃ ÃÑ—K<;

1. ----------c-‹ 99. S“Ñ` ›MðkÆU ----------

110. ¾u?¦cw- ›ÖnLÃ ¨¯G© ¾Ñu= SÖ” e”ƒ ¨¯<;

1. ---------- w` ¨ÃU ---------- ¯Ã'ƒ

98. ›L¨<pU 99. S“Ñ` ›MðkÅU ----------

111. ¾å`e- ¨¯H© ¾Ñu= SÖ” e”ƒ ¨¯<;

1. ---------- w` ¨ÃU ---------- u¯Ã'ƒ

98. ›L¨<pU -------- 99. S“Ñ` ›MðkÆU ----------

112. ¾å`e- ¨¯H© ¾¨ß SÖ” e”ƒ ¨¯<;

1. ---------- w` ¨ÃU ---------- u¯Ã'ƒ

98. ›L¨<pU -------- 99. S“Ñ` ›MðkÆU ----------

¡õM 2 Ÿd”v 'k`d ui¦· SK¾ƒ uòƒ ¾T>¨× ¾ªÒ (¾Ñ”²w) SÖ”

201. ¾d”v 'k`d ui¦— J”¨< ¨Å²=I ጠና ዶርጀ·ት ŸSU×ƒ- uòƒ ¾ISS<

UM¡ƒ Ke”ƒ Ñ>²? ›w`-ƒ qÃ...M;

1. ---------- k“ƒ 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU-----

202. uui¦·¨< ¾¦'d Ÿe^- Ke”ƒ k“ƒ k`¦ªM;

1. ---------- k“ƒ 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU-----.

203. ui¦·¨< ŸSK¾~ uòƒ Ÿe^ Kk\v†¨< k“ƒ U” ÁIM Ñu= (uÑ”²w)

›Ø¦ªM;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

204. ui;ª¨< ŸSK¾~ (ŸS;ª·l) uòƒ K?L ›ÑMÓKAƒ cÜ-‹ ›Ã}-;ª·M;

¾KU ŸJ' ¨Å ØÁo lØ` 214 ÃH>Æ:-

1. ›- ---------- 2. ¾KU ----------

205. KØÁo lØ` 204 SMe ›- ŸJ' e"ƒ ¾Ö?“ ›ÑMÓKAƒ cÜ-‹”

Ôw˜}ªM;

1. ---------- 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

206. U” ›Ã'ƒ ¾Ö?“ ›ÑMÓKAƒ cÜ É`Ïƒ Ôu–<;

1. ¾S"Óeƒ 2. ¾S.Á.É ---------- 3. ¾ÓM ----------

4. vlL© ðªi ----- 5. K?L "K ÃÑKê ----------

207. ›ÖnLÃ ¾Uj` ›ÑMÓKAƒ ("`É ÃÚU^M) ¡õÁ

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

208. ›ÖnLÃ U`S^ (Lx^„] ¨²}) ¡õÁ:-

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

209. ›ÖnLÃ ¾¦Ñ³ SÉH'>ƒ ªÒ

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

210. ¾Ö?“ É`Ï„‹ KSÉ[e U” ›Ã'ƒ ¾SÕÕ¹ ²È ÃÖkTK<;

1. uȤÓ` 2. ¾Ȥ"edƒ Ë`v (upKA' ð[e' ¨²})

3. uª¡c= / u›¨<„u=e 4. K?L "K ÃÑKê----------

211. ¾Ö?“ ›ÑMÓKAƒ cÜ¨< x;ª*KSÉ[e U” ÁIM Ãðìuª;ª·M;

1. ------ c¯ƒ ¨ÃU --------- Åmn

98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

212. ›ÖnLÃ ¾SÕÕ´ ¡õÁ

ı ---------- w`  98. ›L¨<pU ----------  99. KS“Ñ` ›MðkÆU--------

213. K?KA‹ ›ÖnLÃ ¡õÁ-‹

ı. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

214. Ÿ²=ı ጤና ድርጅት ŸSU×ƒ- uòƒ ƛ`Ç,ታ*(ƛ”¡w"u?) ÁÅ[ÑK-ƒ u?}cw ¨ÃU ÕÅ— ›K; KØÁo lØ` 214 SMe ¾KU ŸJ’ ¨Å ØÁo lØ` 301 ÃH>Æ

ı. ›- 2. ¾KU ----------

215. KØÁo lØ` 214 SMe ›-” ŸJ’ u?}cw- ¨ÃU ÕÅ—- e”ƒ k”

Ÿƛ`e- Ò` qÃ¡ªM;

ı. ---------- k“ƒ 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

216. KØÁo lØ` 214 SKe- ›- ŸJ’ ›ÖnLÃ ¾¨¯ Ñu=Á†¨< e”ƒ ¨¨<;

ı. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU-------

217. KØÁo lØ` 214 SMe ›- ŸJ’ *ƛ”¡w"u? ÁÅ[ÑM-ƒ u?}cw ¨ÃU ÕÅ—

¾Ñu= Sk’e ‹Ó` ›ÒØTE†ªM; SMc< ¾KU ŸJ’ ¨Å ØÁo 301 ÃH>Æ

ı. ›- ---------- 2. ¾KU ----------

218. KØÁo lØ` 217 SMe ›- ŸJ’ Kk\v†¨< k“ƒ U” ÁIM ªÒ (Ñu=)

›Ø¡ªM;

ı. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

219. KØÁo lØ` 214 SMe ›-” ŸJ’ ¾Ö?“ É`Ï„‹ KSÉ[e U” ›Ã’ƒ

¾SÕÕ¹ ²È ÃÖkTK<;

ı. uƛÓ`  2. ¾ƛ”edƒ Ë`v (upKA' ð[e' ¨²¡)

3. u,ታ¡c= / u›¨<„u=e 4. K?L "K ÃÑKê----------

220. KØÁo lØ` 214 SMe ›-” ŸJ’ e”ƒ c¯ƒ ÃðÍM;

1. ---------- c¯ƒ ¨ÃU ---------- Åmn

98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

221. KØÁo lØ` 217 SMe ›- ŸJ’ KSÕÕ´ U” ÁIM Ñ”²w ›¨<Ø¦ªM;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

222. KØÁo lØ` 217 SMe ›- ŸJ’ U” ÁIM KK?KA‹ ¨Ü-‹ ›¨<Ø¦ªM;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

¡õM 3 ui,ª¨< Ÿ,ª“k u%EL ¦SLLi •,ª"T>–‹ ¾T>Á¨Ö<ƒ ªÒ(¾Ñ”²w)SÖ”

301. ¦SLLi ¾d”v ’k`d ,ª"T> ŸJ’< ËUa e”ƒ Ñ>²? J•-,ª·M;

1. ----------k“ƒ 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU------

302. ¦Ÿ,ª,ª·Ã 1¡U“ ŸËS\ Ñ>²? ËUa e”ƒ Ñ>²? SØ¦ªM;

1. ---------- k“ƒ 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU------

303. ¦SLLi ,ª"T> uSJ”- U¡”Áƒ Ÿe^ Ke”ƒ k“ƒ k`¦ªM;

1. ---------- k“ƒ 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU------

304. Ÿe^ Kk’<v†¨< k“ƒ U” ÁIM Ñu= ›Ø¦ªM;

1. ---------- k“ƒ 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU------

305. ¦SLLi ¾d”v ’k`d ,ª"T> ŸJ’<uƒ k” ËUa Kl¡U“&KSÉH’>ƒ ¨ÃU

KU`S^ ŸõK¨< ’u`; SMc< ¾KU ŸJ’ ¨Å ØÁo 315 ÃH>Æ:-

1. ›–” ---------- 2. ¾KU ----------

306. KØÁo lØ` 305 SMe ›- ŸJ’ ¦SLLi ,ª"T> uJ’<uƒ Ñ>²? uvKS<Á

K,ª·²² SÉH’>ƒ U” ÁIM ›¨<Ø¦ªM;

1. ----------w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

307. KØÁo lØ` 305 SMe ›- ŸJ’ ¦SLLi •,ª·ŸT> uJ’<uƒ Ñ>²? KU`S^

U” ÁIM ›¨<Ø}ªM;

1. ---------- w`  98. ›L¨<pU ----------  99. KS“Ñ` ›MðkÆU--------

308. KØÁo lØ` 305 SMe- ›- ŸJ’ }SLLi ﻩ"T> uJ’<uƒ Ñ>²? KK?KA‹

¨Ü-‹ (KÊ¡}` ¡õÁ' KSS´Ñu=Á "`É' KMwe ¨²}) U” ÁIM

›¨<Ø}ªM;

1. ----------w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

309. KØÁo lØ` 305 SMe ›-” ŸJ’ KvIL© SÉH’>„‹ U” ÁIM

›¨<Ø}ªM

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU-------

310. KØÁo lØ` 305 SMe ›-” ŸJ’ KK?KA‹ uvKS<Á LMﻩ²²< SÉH’>„‹

(Sð¨h-‹) U” ÁIM ŸõKªM;

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU------

311. KØÁo lØ` 305 SMe ›-” ŸJ’ Å`e- ¨ÃU K=Ôu˜-ƒ ¾S×

KÅ`e¨< UÓw U” ÁIM ›¨<Ø...M::

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

312. ¾Ö?“ É¨Ï„‹ KSÉ[e U” ›Ã’ƒ ¾SÕÕ¹ ²È ÃÖkTK<;

1. uÅÓ`  2. ¾Å”edƒ Ë`v (upKA' ð[e' ¨²})

3. uﻩ¡c= / u›¨<„u=e 4. K?L "K ÃÑKê----------

313. ¾Ö?“ ›ÑMÓKAƒ cÜ¨< xﻩ• KSÉ[e U” ÁIM ÃðìxﻩM;

1. --- c¯ƒ ¨ÃU---- Åmn 98. ›L¨<pU------ 99. KS“Ñ` ›MðkÆU -----

314. ›ÖnLÃ ¾SÕÕ´Á ¡õÁ

1 ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

315. }SLMc¨< uT>ﻩŸS<uƒ Ñ>²? Ÿu?}cw- ¨ÃU ŸÕÅ˜- KÅ`e- •Å”¡w"u?

ÁÅ[Ñ ›K";

1. ›-" ---------- 2. ¾KU ----------

316. KØÁo lØ` 315 SMe ›- ŸJ" ŸÅ`e- Ò` u'u\uƒ Ñ>²? Ÿe^

¾k\uƒ k"ƒ w³ƒ;

1. ---------- k"ƒ 98. ›L¨<pU ---------- 99. KS"Ñ` ›MðkÆU--------

317. KØÁo lØ` 315 SMe ›- ŸJ" ¨H© Ñu=Á†¨< e"ƒ ¨<;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS"Ñ` ›MðkÆU--------

318. KØÁo lØ` 315 SMe ›- ŸJ" KÅ`e- *Å"¡w"u? uTÉ[Ò†¨<

U¡"Áƒ ÁÖ<ƒ Ñu= ›K;

1. ›-" ---------- 2. ¾KU ----------

319. KØÁo lØ` 318 SMe ›- ŸJ" Kk\v†¨< k"ƒ U" Á1M ªÒ (Ñ"²w)

›Ø¦ªM;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS"Ñ` ›MðkÆU--------

320. ¾Ö?" É`Ï„‹ KSÉ[e U" ›Ã'ƒ ¾SÕÕ¹ ²È ÃÖkTK<;

1. uÅÓ` 2. ¾Å"edƒ Ë`v (upKA' ð[e' ¨²¦)

3. u,ª¡c= / u›¨<„u=e 4. K?L "K ÃÑKê----------

321. ¾Ö?" ›ÑMÓKAƒ cÜ¨< x,ª*KSÉ[e U" Á1M ÃðÌx,ªM;

1.--- c¯ƒ ¨ÃU-----Åmn 98. ›L¨<pU ------ 99. KS"Ñ` ›MðkÆU------

322. KØÁo lØ` 318 SMe ›- ŸJ" KSÕÕ¹ U" Á1M ›¨<Ø¦ªM;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS"Ñ` ›MðkÆU--------

323. KØÁo lØ` 318 SMe ›- ŸJ" KK?KA‹ ¨Ü-‹ U" Á1M

›¨<Ø¦ªM;

ı. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ››MðkÆU--------

Ñ>²?-” Se°ƒ ›É`Ñ¨< eK}vu\˜ ›ScÓ“KG<::

ANNEX 3

CONSENT FORM

INFORMED CONSENT

Hello. My name is _____ and I am part of a team of people who are carrying out a study on “Cost of illness of Tuberculosis to Patients and their Families: A Cross-sectional Study at Health centers in Gondar town, North Gondar Administrative Zone`` (Show a letter of approval). We would very much appreciate your participation in this study. I would like to ask you some questions and it will take about 30 minutes. Your answers will remain confidential, and we will not be taking down your name or address, so your answers will be anonymous.

Participation in this study is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this study since your views are important.

At this time, do you want to ask me anything about the survey?

May I begin the interview now?

Start time:_____ End time:_____ Date_____/____/_____

Respondent Agrees To be Interviewed_____1

Respondent Does Not Agree To be Interviewed _____2

Name of Data collector: _____
Signature_____

Name of Supervisor: _____

Signature_____

ANNEX 4

QUESTIONNAIRE FOR COST ESTIMATION OF INPATIENT TB CASES ONLY

Questionnaire Number: _____

Patient TB Number*:* _____

Section1. Socio-economic and Demographic Characteristics

Ser. No	Questions	Possible answers and coding	Skip
101	Sex	1.Male 2.Female	
102	How old are you?	1. _____years 98. I don't know 99. Refused to tell	
103	What is your marital status?	1. Single (never been married) 2. Married 3. Separated 4. Widowed 5. Divorced 6. Other (specify)_____	
104	What is your educational status?	1. Illiterate 2. Read and write only 3. Grade 1-6 (primary education) 4. Grade 7-8 (junior secondary education) 5. Grade 9-12 (senior secondary education) 6. College, university 7. Other (specify)_____	
105	What is your main occupation (Past twelve months)?	1. Unemployed 2. Retired 3. Pupil/ student 4. Disabled/ sick	

		5. House wife 6. Merchant 7. Daily laborer 8. Employed by government 9. Employed private for profit sector 10. Employed by NGO 11. Self- employed, business with employees 12. Self-employed, business no employees 13. Self-employed, farmer/ fishing 14. Other (specify_____	
106	Number of people living in your family?	1. _____ 99. Refused to tell	
107	How many are employed/ working at the moment?	1. _____ 99. Refused to tell	
108	What is their regular total monthly income?	1. _____ 98. I don't know 99. Refused to tell	
109	What is your monthly income?	1. _____Birr or _____in Kind 98. I don't know 99. Refused to tell	

Section2: Costs of Tuberculosis before Diagnosis

Ser. No	Questions	Possible answers and coding	Skip
201	How long did you have your complaints before becoming a patient at this health facility?	1. _____ days 98. I don't know 99. Refused to tell	
202	How many days had you remained from work?	1. _____ days 98. I don't know 99. Refused to tell	
203	Amount of wages lost for days lost from work	1. _____Birr 98. I don't know 99. Refused to tell	

204	Did you visit any other providers before diagnosis of TB?	1. yes 2. No	If no, Skip to Q 214
205	If yes to Q 204, number of health services/providers visited before diagnosis?	1. _____ 98. I don't know 99. Refused to tell	
206	Which health services did you visit?	1. Government 2. NGO 3. Private 4. Traditional Healer 5. other (specify)_____	
207	Total cost of consultation fees	1. _____Birr 98. I don't know 99. Refused to tell	
208	Total cost of Investigations (laboratory, X-ray, etc)	1. _____Birr 98. I don't know 99. Refused to tell	
209	Total cost of drugs purchased	1. _____Birr 98. I don't know 99. Refused to tell	
210	What is the means of transportation to get to the health facilities?	1. On foot 2. On animal Back 3. Taxi/bus 4. Other(specify)_____	
211	How long does it take you to get the health services site?	1. _____hours or _____minutes 98. I don't know 99. Refused to tell	
212	Total cost of Transportations	1. _____Birr 98. I don't know 99. Refused to tell	
213	Other total costs	1. _____ Birr 98. I don't know 99. Refused to tell	
214	Has anyone from your family or friends looked after you prior to coming here?	1. Yes 2. No	If no, skip to Q 301
215	If yes to Q 214, number of days lost from work to accompany You?	1. _____ days 98. I don't know 99. Refused to tell	
216	If yes to Q 214, what is their	1. __ _____ Birr	

	monthly income?	98. I don't know 99. Refused to tell	
217	If yes to Q 214, Do any of the care-givers lose any income because they cared for you?	1. Yes 2. No	
218	If yes to Q 214, amount of wages lost per days lost from work?	1. _____ Birr 98. I don't know 99. Refused to tell	
219	What is the means of transportation for caregivers to get to the health facility?	1. On foot 2. On animal Back 3. Taxi/bus 4. Other(specify)_____	
220	How long does it take them to get the health services site?	1. _____hours or _____minutes 98. I don't know 99. Refused to tell	
221	If yes to Q 214, amount of cost for transportation?	1. _____ Birr 98. I don't know 99. Refused to tell	
222	If yes to Q 214, amount of cost for other expenditures?	1. _____ Birr 98. I don't know 99. Refused to tell	

Section3. Costs of Tuberculosis after Diagnosis as an Inpatient

Ser. No	**Questions**	**Possible answers and coding**	**Skip**
301	How many days did you stay in this health facility?	1. _____ days 98. I don't know 99. Refused to tell	
302	Did you have to buy anything special for your stay in the health facility (i.e. towels, home dressing gown, sleepers, etc.)?	1. Yes 2. No	If no, skip to Q 305
303	If yes, How much have you spent?	1. _____ Birr 98. I don't know 99. Refused to tell	
304	How many days have you remained from work being an inpatient?	1. _____ days 98. I don't know 99. Refused to tell	
305	Did you lose any income as a	1. Yes	If no, skip to Q

	result of being in the health facility?	2. No	307
306	If yes, How much have you spent per days lost from work?	1. _____ Birr 98. I don't know 99. Refused to tell	
307	Did you have to pay anything for your treatment, prescribed drugs or tests since being in this health facility?	1. Yes 2. No	If no, skip to Q 311
308	If yes, How much have you spent on prescribed drugs while you were an inpatient?	1. _____ Birr 98. I don't know 99. Refused to tell	
309	If yes, How much have you spent on investigations while you were an inpatient	1. _____ Birr 98. I don't know 99. Refused to tell	
310	If yes, How much have you spent on other payments to the health institution or staff? (Doctors payments, registration cards, clothing etc)?	1. _____ Birr 98. I don't know 99. Refused to tell	
311	How much have you spent on traditional remedies?	1. _____ Birr 98. I don't know 99. Refused to tell	
312	How much on any other un-prescribed remedies?	1. _____ Birr 98. I don't know 99. Refused to tell	
313	How much have you or any visitors spent on your food while in the health facility ?	1. _____ Birr 98. I don't know 99. Refused to tell	
314	Has anyone from your family or friends looked after you during your stay in the health facility?	1. Yes 2. No	
315	If yes, number of days lost from work to accompany You?	1. _____ Birr 98. I don't know 99. Refused to tell	
316	If yes, what is their monthly income?	1. _____ Birr 98. I don't know 99. Refused to tell	
317	If yes, Do any of the care-givers lose any income because they cared for you?	1. Yes 2. No	
318	If yes, amount of wages lost per days lost from work?	1. _____ Birr 98. I don't know 99. Refused to tell	

319	If yes, what is the means of transportation for caregivers to get to the health facility?	1. On foot 2. On animal Back 3. Taxi/bus 4. Other(specify)_____	
320	If yes, how long does it take them to get the health services site?	1. _____hours or _____minutes 98. I don't know 99. Refused to tell	
321	If yes, amount of cost for transportation?	1. _____ Birr 98. I don't know 99. Refused to tell	
322	If yes, amount of cost for other expenditures?	1. _____ Birr 98. I don't know 99. Refused to tell	

THANK YOU FOR YOUR TIME AND COOPERATION!

¾eUU'ƒ pê

eUU'ƒ

Ö?“ ÃeÖM˜ ȟ'@ eT@ ---------- ÃvLM:: uÔ”Å` Ÿ}T uT>Ñ'–< Ö?“ ×u=Á¨‹ LÃ ¾d”v 'k`d ulSU}™‹“ u›e,ƥTT>-‰†¨< LÃ ¾T>ÁS×¨<” ¾›=¢•T> Ý“ KT¨p uT>"H@Å¨< Ø“ƒ LÃ }d,ƥò ˜::

u²=I Ø“ƒ LÃ uSd}õ- Ÿõ}— ¾J' ›É“qƒ Ã•[“M :: K²=I Ø“ƒ Ã[Ç” ²”É 30 Åmn ÑÅT ¾T>¨eÉ ØÁo-‹” MÖÃk-ƒ ȟMÒKG<:: ¾T>cÖ<” SMe uUeÖ=` ¾T>Öup c=J” eU-”“ ›É^h-” uSÖÃl LÃ ›”ÖpeU::

u²=I Ø“ƒ LÃ Sd}õ uȟe- S<K< ðnÅ˜ƒ LÃ ¾}Sc[} c=J” ›”É ØÁo ¨ÃU G<K<”U ØÁo-‹” ›KSSKe Ã‹LK<:: 'Ñ` Ó” ¾ȟe- ›e}Á¾ƒ ¨ÃU SMe ÖnT> eKJ' uØ“~ LÃ Ãd}óK< wK” }eó ȟ“Å`ÒK”::

›G<” eK Ø“~ T“†¨<”U 'Ñ` K=ÖÃl˜ ÃðMÒK<;

›G<” SÖÃl” SËS` ȟ‹LKG<”;

SËS]Á c¯ƒ ---------- SÚ[h c¯ƒ ---------- k” ----------

SMe cÜ¨< (ª) KSÖÃl SMe cÜ¨< (ª) KSÖÃl

}eTU}ªM ---------- ›M}eTS<U ----------

¾S[Í cwdu=¨<(ª) eU ---------- ò`T ----------

¾}q××]¨< (ª) eU ---------- ò`T ----------

¾d”v ’k`d lS<T” ¾S‚ÿT>Á Ñ”²w SÑS‰ SÖÃp

}˜}¨< KT>‚ÿS< ¾d”v ’k`d lS<T” w‰

SÖÃp lØ` ----------

¾d”v ’k`d lSU}— SKÁ lØ` ----------

¡õM 1 ›ÖnLÃ ¾ÓKcu< (¾ui}—¨<) S[Í

101. ï*:- 1. ¨”É ---------- 2. c?ƒ ----------

102. °ÉT@:- 1. ---------- ¯Sƒ

98. ›L¨<k¨<U ---------- 99. SSKe ›MðMÑ<U -------

103. ¾Òw‰ G<’@‚ÿ*:-

1. ÁLÑv ---------- 2. ÁÑv (›wa ¾T>*`) ----------

3. }KÁÃ}¨< ¾T>*\ ---------- 4. vLD (T>e~) ¾V}uƒ ----------

5. ¾}ó‚ÿ(Ÿ)* ---------- 6. K?L "K ÃÓKê ----------

104. ¾ƒUIƒ`ƒ (ÁÖ“kk/ ÁÖ“kk‹)

1. ÁM}T[----- 2. T”uw“ Síõ w‰ --------

3. Ÿ1— -6— ¡õM --------- 4. Ÿ7— -8— ¡õM -------

5. Ÿ9— - 12— ¡õM ------- 6. ¢K?Ï ¿’>y`e+ --------

7. K?L "K ÃÓKê ----------

105. K›Kñƒ 12 ¨^ƒ ª’— e^- U”É” ”¨<;

1. e^ ›Ø ---------- 2. Ö<[}— ----------

3. }T] ---------- 4.. Se^ƒ ¾TÃ‹M / lSU}— --

5. ¾u?ƒ ÅSu?ƒ --------- 6. ’ÒÈ ---------- 7. ¾k” c^}— ---------- 8. ¾S”Óeƒ }k×] ----------

9. ¾ÓM É`Ïƒ }k×] ---------- 10. S.Á.É }k×] ----------

11. ¾^c< É`Ïƒ c^}— ÁK<ƒ------  12. ¾^c< É`Ïƒ c^}— ¾K?K<ƒ ---

13. u^c< }k×] Ñu_ /›LeÒ] ---- 14. K?L "K ÃÓKê ----------

106. uu?}cw- ¨<eØ ¾T>Ñ–< ¾c-‹ w³ƒ:-

1. ---------- c-‹ 99. S“Ñ` ›MðkÆU ----------

107. Ÿu?}cw- ¨<eØ u›G<'< e”„‡ }k×] "†¨<; ¨ÃU uY^ LÃ ÃÑ—K<;

1. ----------c-‹ 99. S“Ñ` ›MðkÆU ----------

108. ¾u?}cw- ›ÖnLÃ ¨¨G© ¾Ñu= SÖ” e”ƒ ”¨<;

1. ---------- w` ¨ÃU ---------- ¯Ã'ƒ

98. ›L¨<pU 99. S“Ñ` ›MðkÅU ----------

109. ¾Å`e- ¨¨H© ¾Ñu= SÖ” e”ƒ ”¨<;

1. ---------- w` ¨ÃU ---------- u¯Ã'ƒ

98. ›L¨<pU -------- 99. S“Ñ` ›MðkÆU ----------

¡õM 2 Ÿd”v 'k`d ui¿• SK¾ƒ uòƒ ¾T>¨× ¾ªÒ (¾Ñ”²w) SÖ”

201. ¾d”v 'k`d ui}— J”¨< ¨Å²=I Ö?“ É`Ïƒ ŸSU×ƒ- uòƒ ¾ISS<

UM¡ƒ Ke”ƒ Ñ>²? ›w`-ƒ qÃ...M;

1. ---------- k“ƒ 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU-----

202. uui¿•¨< ¾}'d Ÿe^- Ke”ƒ k“ƒ k`}ªM;

1. ---------- k“ƒ 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU-----.

203. ui¿•¨< ŸSK¾~ uòƒ Ÿe^ Kk\v†¨< k“ƒ U” ÁIM Ñu= (uÑ”²w)

›Ø}ªM;

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

204. ui;ª¨< ŸSK¾~ (ŸS;ª·l) uòƒ K?L ›ÑMÓKAƒ cÜ-‹ ›Ã}-;ª·M;

¾KU ŸJ' ¨Å ØÁo lØ` 212 ÃH>Æ:-

1. ›- ---------- 2. ¾KU ----------

205. KØÁo lØ` 204 SMe ›- ŸJ' e"ƒ ¾Ö?“ ›ÑMÓKAƒ cÜ-‹”

Ôw˜}ªM;

1. ---------- 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

206. U” ›Ã'ƒ ¾Ö?“ ›ÑMÓKAƒ cÜ É`Ïƒ Ôu–<;

1. ¾S"Óeƒ 2. ¾S.Á.É ---------- 3. ¾ÓM ----------

4. vlL© ðªi ----- 5. K?L "K ÃÑKê ----------

207. ›ÖnLÃ ¾Uj` ›ÑMÓKAƒ ("`É ÃÚU^M) ¡õÁ

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

208. ›ÖnLÃ U`S^ (Lx^„] ¨²}) ¡õÁ:-

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

209. ›ÖnLÃ ¾¦Ñ³ SÉH'>ƒ ªÒ

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

210. ¾Ö?“ É`Ï„‹ KSÉ[e U” ›Ã'ƒ ¾SÕÕ¹ ²È ÃÖkTK<;

1. uȤÓ` 2. ¾Ȥ"edƒ Ë`v (upKA' ð[e' ¨²})

3. u;ª¡c= / u›¨<„u=e 4. K?L "K ÃÑKê----------

211. ¾Ö?“ ›ÑMÓKAƒ cÜ¨< x;ª*KSÉ[e U” ÁIM Ãðìx;ª·M;

1. ---------- c¯ƒ ¨ÃU --------- Åmn

98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

212. ›ÖnLÃ ¾SÕÕ´Á ¡õÁ

1 ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

213. K?KA‹ ›ÖnLÃ ¡õÁ-‹

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

214. Ÿ²=1 Ö ?“ É`Ïƒ  ŸSU×ƒ- uòƒ *ƛ`Ç⁄* (ƛ”¡w"u?) ÁÅ[ÑK-ƒ u?¦cw ¨ÃU ÕÅ— ›K; KØÁo lØ` 214 SMe ¾KU Ÿ]’ ¨Å ØÁo lØ` 301 ÃH>Æ

1. ›---------- 2. ¾KU ----------

215. KØÁo lØ` 214 SMe ›-” Ÿ]’ u?¦cw- ¨ÃU ÕÅ—- e”ƒ k”

Ÿƛ`e- Ò` qÃ¦ªM;

1. ---------- k“ƒ 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

216. KØÁo lØ` 214 SKe- ›- Ÿ]’ ›ÖnLÃ ¾¨ Ñu=Á†¨< e”ƒ ¨<;

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU-------

217. KØÁo lØ` 214 SMe ›- Ÿ]’ ƛ”¡w"u? ÁÅ[ÑM-ƒ u?¦cw ¨Ãe ÕÅ—

¾Ñu= Sk’e ‹Ó` ›ÒØTE†ªM; SMc< ¾KU Ÿ]’ ¨Å ØÁo 301 ÃH>Æ

1. ›- ---------- 2. ¾KU ----------

218. KØÁo lØ` 217 SMe ›- Ÿ]’ Kk\v†¨< k“ƒ U” ÁIM ªÒ (Ñu=)

›Ø¦ªM;

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

219. KØÁo lØ` 217 SMe ›-” Ÿ]’ ¾Ö?“ É`Ï„‹ KSÉ[e U” ›Ã’ƒ

¾SÕÕ¹ ²È ÃÖkTK<;

1. uƛÓ`  2. ¾ƛ”edƒ Ë`v (upKA' ð[e' ¨²¦)

3. u⁄¡c= / u›¨<„u=e 4. K?L "K ÃÑKê----------

220. KØÁo lØ` 217 SMe ›-” Ÿ]’ e”ƒ c¯ƒ ÃðÍM;

1. ---------- c¯ƒ ¨ÃU ---------- Åmn

98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

221. KØÁo lØ` 217 SMe ›- ŸJ’ KSÕÕ´ U” ÁIM Ñ”²w ›¨<Ø¦ªM;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

222. KØÁo lØ` 217 SMe ›- ŸJ’ U” ÁIM KK?KA‹ ¨Ü-‹ ›¨<Ø¦ªM;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

¡õM 3 ui›¨< Ÿ›“k u%EL }˜}¨< ¾T>›ŸS< lSU¦™‹ ¾T>Á¨Ö<ƒ ¾ªÒ (¾Ñ”²w) SÖ”

301. uጤና ድርጅቱ U” ÁIM k” qÃ¦ªM;

1. ---------- k“ƒ 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

302. ጤና ድርጅቱ ላይ uq¿v†¨< k“ƒ ¨<eØ ¾¦K¾ ’Ñ` (Kö×’ KÒ¨”’ K’ÖL ÝT

¨²¦) ¾ŸðK<ƒ ’u`; SMc< ¾KU ŸJ’ ¨Å ØÁo lØ` 304 ÃH>Æ

1. ›-” ---------- 2. ¾KU ----------

303. KØÁo 302 SMe ›- ŸJ’ U” ÁIM Ñ”²w ›¨Ö<;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU-------

304. uጤና ድርጅቱ }˜}¨< uT>›ŸS<uƒ Ñ>²? Ÿe^ Ke”ƒ k“ƒ k`¦ªM;

1. ---------- k” 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU-------

305. uጤና ድርጅቱ uS}—ƒ- (uSJ”-) U¡”Áƒ ÁÖ<ƒ Ñu= Ã*^M; SMc< ¾KU

ŸJ’ ¨Å ØÁo 307 ÃH>Æ

1. ›-” ---------- 2. ¾KU ----------

306. KØÁo lØ` 305 SMe ›- ŸJ’ uk\v†¨< k“ƒ U” ÁIM Ñu=

›Ø¦ªM;

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU-----

307. u²=I ጤና ድርጅት Ÿ}—<uƒ k” ËUa KI¡U“' KSÉH'>ƒ ¨ÃU KU`S^

¾ŸðK<ƒ Ñ"²w 'u`; SMc< ¾KU ŸJ' ¨Å ØÁo lØ` 3II ÃH>Æ:-

1. ›-” ---------- 2. ¾KU ----------

308. KØÁo lØ` 307 SMe ›-” ŸJ' }˜}¨< uT>ታŸS<uƒ Ñ>²? KSÉH'>ƒ

U” ÁIM ŸõK³M;

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

309. KØÁo lØ` 307 SMe ›-” ŸJ' }˜}¨< uT>ታŸS<uƒ Ñ>²? KU`S^

U” ÁIM ŸõK³M;

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

310. KØÁo lØ` 307 SMe ›- ŸJ" }˜}¨< uT>ታŸS<uƒ Ñ>²? U” ÁIM

KK?KA‹ ¡õÁ-‹ (KÊ¡}a‹' KSS´Ñu= "`É' KMwe ¨²}..) ›¨<Ø}³M;

1. ----------w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

3II. KvIM SÉHÉH'>„‹ U” ÁIM ›¨<Ø}³M;

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

312. KK?KA‹ uvKS<Á vMታ²²< SÉH'>„‹ U” ÁIM ŸõK³M;

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

313. uጤና ድርጅቱ }˜}¨< uT>ታŸS<uƒ Ñ>²? *Ѐ`e- ¨ÃU K=Ôu˜-ƒ ¾S×

Kѐ`e- UÓw U” ÁIM ›¨<Ø}³M;

1. ---------- w`  98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

314. uጤና ድርጅቱ }˜}¨< uT>ታŸS<uƒ Ñ>²? Ÿu?}cw- ¨ÃU ŸÕÅ—- Ѐ”¡w"u?

ÁÅ[ÑM-ƒ 'u`;

1. ›-” ---------- 2. ¾KU ----------

315 KØÁo lØ` 314 SMe ›- ŸJ' Ÿå`e- Ò` uSJ“†¨< Ÿe^ U” ÁIM

k” k\;

1. ---------- k“ƒ 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

316. KØÁo lØ` 314 SMe ›- ŸJ' ¾¨¨ Ñu=Á†¨< e”ƒ ¨¨<;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

317. KØÁo lØ` 314 SMe ›- ŸJ' Kå`e- å”¡w"u? uTÉ[Ò†¨<

¾T>ÁÖ<ƒ Ñu= ›K;

1. ›-” ---------- 2. ¾KU ----------

318. KØÁo lØ` 317 SMe ›- ŸJ' Kk\v†¨< k“ƒ U” ÁIM Ñ”²w (ªÒ)

Á×K<;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

319. ¾Ö?“ É`Ï„‹ KSÉ[e U” ›Ã'ƒ ¾SÕÕ¹ ²È ÃÖkTK<;

1. uåÓ` 2. ¾å”edƒ Ë`v (upKA' ð[e' ¨²¦)

3. u,ª¡c= / u›¨<„u=e 4. K?L "K ÃÑKê----------

320. ¾Ö?“ ›ÑMÓKAƒ cÜ¨< x,ª KSÉ[e U” ÁIM Ãðlx,ªM;

1. ---------- c¯ƒ ¨ÃU --------- Åmn

98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

321. KØÁo lØ` 317 SMe ›- ŸJ' KSÕÕ´ U” ÁIM ›¨<Ø¦ªM;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

322. KØÁo lØ` 317 SMe ›- ŸJ' KK?KA‹ ¨Ü-‹ U” ÁIM

›¨<Ø¦ªM;

1. ---------- w` 98. ›L¨<pU ---------- 99. KS“Ñ` ›MðkÆU--------

Ñ>ª?-” Seªº ƒ ›É‘Ñ¨< eK}vu\˜ ›ScÓ“K::